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ABSTRACT

This manual is intended to guide evaluators, special needs personnel, private practitioners, manpower training instructors, and others in selecting, using, and modifying psychological tests within an evaluation or assessment setting. The first section discusses reasons for using tests in vocational evaluation, problems in using the tests, testing conditions and practices, and procedures for selecting and using tests. Addressed in a section on test modification are some general cautions to those modifying tests and specific methods for modifying tests for blind, deaf, and mentally retarded persons. The third part of the guide consists of test review outlines of 4 achievement, 18 aptitude, 5 intelligence, 9 interest, 12 work attitude and behavior, and 6 dexterity tests. Each outline includes information on the test's purpose, subtests, characteristics, usefulness in its present form, and possible modifications, as well as criteria for selecting the test, subjective comments, and a source from which the test may be ordered. (MN)

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TESTING AND TEST MODIFICATION IN VOCATIONAL EVALUATION

Karl F. Botterbusch, Ph.D., CVE
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Preface

This publication is intended to be a practical guide for the selection, use and, if necessary, the modification of psychological tests within an evaluation or assessment setting. The publication will be useful to evaluators, special needs personnel, private practitioners, manpower training programs, and others who must estimate a person's vocational potential.

This publication contains three major sections: Part 1 presents general information on testing, their selection, and use within evaluation programs. Part 2 discusses the modification of tests for special disability groups. Part 3 reviews tests commonly used in evaluation. The evaluator is cautioned about using Part 3 without first reading Part 1 and 2. Because many of the problems with testing can be attributed to poor selection and planning, Part I should be carefully read. Our theme in Part 1 is that testing should be planned individually and should relate to the specific needs of the client.

Part 2 discusses the modification of tests for three major disability groups: visually disabled, hearing impaired, and mentally retarded. Test modification should be used only after the evaluator has failed to locate an appropriate test that is useful without modification. The modification of tests is a complex process and should not be performed without prior planning. One reminder is necessary; because tests are copyrighted, they cannot be changed without written permission from the publisher. Always obtain this permission first.

With a few exceptions, Part 3 contains brief reviews of tests that would appear to be useful in evaluation and assessment. The tests were reviewed according to an outline, containing what we consider the major factors to consider when selecting tests. The reader will note that we have included some ideas and comments about possible modification for each test. These ideas are intended to act as a source of ideas; they are not the final word.

We would like to comment on our choice of language. Throughout this publication we have used the terms "disabled" and "handicapped" interchangeably; we have also used "blind," "deaf" and "mental retardation." Our selection of these words was made solely for style. We are fully aware of the subtle differences implied by these and similar words.

Finally we would like to thank Ms. Barbara Greenhill of the North Carolina Division of Vocational Rehabilitation Services for her editing, Ms. Darlene Shane for the manuscript preparation, proofreading and all the other tasks necessary to turn a two inch stack of paper into a publication and Ms. Mary Bates for preparation of the final manuscript.

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May, 1985

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Part I - Testing and Evaluation

Reasons for Test Use in Vocational Evaluation

Vocational evaluators have at their command several different types of assessment tools and techniques, among them a wide variety of psychological tests. In administering tests, as in using any other assessment method, the question to be asked is quite simple: what method gives me the most accurate information about a particular trait, characteristic, behavior, etc. in the shortest period of time and at the lowest cost? The reader will note that the first part of the question is the most important--getting "the most accurate information." The goal of evaluation is to accurately assess the client; the selection of specific assessment techniques is secondary and largely dependent upon the evaluator's professional judgement. In theory any of the four evaluation methods (i.e. job site evaluation, situational assessment, work sample techniques and psychological testing) can be used for assessment of a particular trait, the evaluator will often elect to administer a test. There are several reasons for this:

The first is economic; compared with other evaluation techniques, tests are the least expensive way to obtain information about a client. Job site evaluation requires a considerable time investment both to develop the initial job site and then to maintain a client on the site. Situational assessment requires the existence of a workshop, production contracts and supervisory staff. Both of these techniques require that the client be paid for what he/she produces. Facility-developed work samples require staff time for development as well as construction money and time; some entire commercial work sample systems are priced over $25,000. All work samples eventually require replacement parts and many require expendable supplies. Tests have several advantages: (1) being inexpensive to purchase, (2) often group administered, and (3) often require separate answer sheets which reduce the expense of expendable supplies. There is an inverse relationship between the closeness of the technique to real work, as seen by the client, and the overall cost of the technique. This can be visualized as follows:

Technique	Cost	Perceived Relationship To Real Work
Job Site Evaluation	HIGH	HIGH
Situational Assessment	↓	↑
Work Sample Techniques		
Psychological Testing	LOW	LOW

The second reason for test use is ease and speed of administration. Most tests are designed to measure a sample of a behavior(s) in a short time period. Other assessment techniques almost always take longer. For example, an evaluator can assess mechanical comprehension using a test that takes 30 minutes to administer to four clients or he/she can place these clients on a mechanical comprehension work sample that takes two hours per client. The test saved seven and a half hours, time that could be used to perform other tasks or provide in-depth assessment of a particularly difficult characteristic. If the only considerations were economic, then most evaluators would use tests as their only method and become psychometricians. However, while no one can argue with the economic advantages of tests, we must return to the more basic consideration--are the results accurate for a particular client? If the evaluator assesses the mechanical comprehension of a client who cannot read, who has a high degree of test anxiety, who cannot see the items, or who cannot understand the instructions, then the most accurate method of assessment is not a test. (Test modification is another possibility; this is discussed later in this publication.) Evaluation results are a significant factor in vocational decisions, and faulty decisions can cost the referral source money (to say nothing of the client). Administering tests to save a few dollars at the expense of accuracy is an extremely shortsighted policy. The point is that while tests are economical, they are only economical if assessment is accurate. In other words, if the test does not yield accurate information about the client, it is useless, regardless of how inexpensive it is to administer and score.

Third, in some instances tests are the most realistic or only method of obtaining information. Basic reading, spelling, writing and arithmetic skills are commonly assessed by tests. Given the generally low level of most work samples and job site evaluations, more advanced cognitive and literacy skills are best measured by tests. The emphasis on behavior observation is one of the unique aspects of vocational evaluation, and yet some covert personality characteristics cannot readily be inferred from behavior observations. Properly used and interpreted "personality" tests are the only realistic way to assess these hidden aspects of the client's behavior.

Fourth, in some instances tests are legally mandated or required by the referral source. The legal definition of mental retardation in some states is partially based on a Binet or WAIS IQ below a certain point. Often state vocational rehabilitation agencies require certain information as part of their eligibility requirements; such information can only be obtained from testing. While the evaluator may not agree with this, his/her agency must offer these services to gain referrals. Some training programs or vocational schools require a specified reading and/or arithmetic level prior to entry.

Fifth, tests are needed to compare the client's performance with the most appropriate norm group, such as employed workers or students in a particular training program. While the goal of vocational rehabilitation has always been placement in competitive industry, the recent emphasis on direct placement makes this goal even more important. If the goal of rehabilitation is competitive employment, then all assessment techniques should have norms or standards from competitive industry. We need to know how the client compares to competitively employed workers or, at least, to persons in training programs. Selecting tests with the appropriate norms is one way to determine how a client compares with various competitively employed persons.

Finally, carefully selected tests can reduce the total evaluation period. Because tests are a very good way of obtaining information in a short period of time, they have two potential uses in vocational evaluation: first, if the evaluation time is limited to a predetermined number of days (e.g. three or five days), tests are administered for the initial screening of basic abilities. Second, during the remainder of the evaluation period, they assess many skills and aptitudes formerly evaluated with work samples.

Some Examples of Test Use in Vocational Evaluation

Tests are useful when planning evaluation. If the referral questions are nonexistent or too vague, then the evaluation process could begin with a general screening of the client's interests, aptitudes and, especially, literacy skills. The results of this preliminary testing would be discussed with the client and incorporated into the evaluation plan. Thus, initial testing functions define the parameters of the evaluation plan. A note of caution is necessary-starting a new client with a large battery of tests can easily fall into the problems of test overuse (see page 5).

Tests can substantiate other evaluation results. If a client has done poorly on several work samples involving numerical skills, the evaluator should further investigate this by administering achievement tests and by comparing the results with norms developed on employed workers. A client, who performs poorly on work samples in several occupational areas, whose only common factor is the ability to visualize three-dimensional objects from diagrams and blueprints, could be given a spatial ability test to determine if this is the reason for the poor results. In these two examples tests were used to investigate possible reasons why a client experienced low scores on several work samples. While other techniques could be used to substantiate these results, tests were used primarily because of their adequate norms and because they measured specific aptitudes rather than a poorly defined variety of skills.

Tests help to decide between two alternatives. For example, a client does well on a variety of work samples in both the clerical and sewing areas and has verbally expressed an interest in both. Other results agree that both areas are within the client's overall ability. There are several ways of helping the client decide between these two areas. Additional occupational information is given to the client, the local job market discussed, and the chances for upward mobility are mentioned. At this point a more covert determination of interests and needs is obtained through testing-information obtainable from no other source.

When making vocational decisions, all sources of information are weighed by the evaluator and client. Choosing between alternatives commonly involves deciding between different levels of jobs within an occupational hierarchy. A client may definitely be interested in machine shop occupations, but does not know his/her abilities in this area. Jobs in this industrial area vary in the degree of skills required and in the ability needed to reach these skills. Tests of mechanical comprehension, shop mathematics, and ability to make fine discriminations can help the client decide if he/she should consider a fairly low level job such as a punch press operator, a semiskilled job like a drill press operator, or to train for a position as a tool-and-die maker.

As a final example, tests can help answer questions or hypotheses raised by the client's history or evaluation results. A client has a job history consisting of several jobs of short duration. Work samples reveal no skill deficiencies, behavior observations show no overt problems that cause the client to loose a job, and the client is unable to adequately explain the reasons for the employment history. The following hypotheses could be tried: (1) the client has a personality or psychiatric problem that only manifests itself while on the job; (2) the client's intelligence may be extremely high, thus, causing boredom resulting in frequent job changes; and (3) the client may not really be interested in clerical work. These hypotheses would be discussed with the client and investigated one at a time. For the first hypothesis a test like the MMPI or 16PF would be administered, there are several intelligence tests that could test the second hypothesis, and the Strong-Campbell Interest Inventory or another interest inventory helps answer the third. To conclude when encountering problems for which there are no apparent answers, consider testing as a possible method for answering these questions.

The above paragraphs gave some examples of the specific uses of tests in the evaluation process. These are only examples and the evaluator may think of other situations where testing may help solve other difficult or complex questions. The themes of this section are that tests can be used in creative ways to solve problems and that testing is an important part of many clients' evaluation plans.

Problems in Test Use

The first two sections gave reasons and examples for incorporating testing in the evaluation plan. However, serious problems are associated with test use. Generally, the failure of tests to yield accurate data is caused by two problems: (1) poor test selection and usage and (2) some tests are not useful for anything. This section lists some common misuses of tests in evaluation.

Overuse ("Tuesday everyone takes the WRAT") - Some evaluation programs overuse tests by automatically scheduling every client to take a certain test or group of tests. Overuse occurs for several reasons: (1) lack of individualized client planning, (2) a desire for easier client scheduling and (3) faith that one test or group of tests yields valid results for all clients. There must be a reason for administering each test and the purpose must be clearly stated in the evaluation plan. To administer an achievement test battery to a client already known to be illiterate is a waste of time and money and only gives the client one more bad experience with tests. To be more general, before administering any evaluation technique, determine what information is needed for that client. Administering an intelligence test to a client who has recently taken the WAIS is duplication of effort. While it is true that some tests have more uses than others, it does not follow that a particular test is useful for every client. In conclusion, the best way to prevent overuse is to carefully plan each client's evaluation program.

Indiscriminate Use ("She was given a battery of computer tests even though she had no interest in this area and the results of several work samples were negative.") - Indiscriminate use of tests simply means that tests are administered without much, if any, planning. In some cases a client is administered a test(s) even when other evaluation results have already provided the answer. If several adequately developed work samples in a specific occupational area indicate no interest and/or low time and quality scores, then there is little need for a group of tests to demonstrate the same findings. For example, an automobile mechanic with a recent injury to his dominate hand is referred to determine if he can return to his former job. The first phase of this client's evaluation plan centers on the question: "Does he have the physical ability to return to his former occupation as a mechanic?"

This is answered by using work samples and job site evaluation. If he can return to his prior job, then no further assessment of any type is needed. However, if this person can no longer work as an automobile mechanic, then the second phase is to answer this question: "What are his transferable skills, if any, to other mechanical jobs within his physical limitations?" During this second phase interest inventories and mechanical reasoning tests are helpful. Administering these or other measures during the first phase is not a wise use of testing. Two conclusions can be drawn from this example: (1) testing must be individually and carefully planned for each client and (2) testing should not be used when the evaluator is certain that other techniques have already given accurate information.

Separation of Learning from Performance ("Tests measure what the client does; not what he/she knows.") - One problem with testing, as with any other technique, is separating learning from performance (McCray, 1979). Often this is difficult because learning cannot be seen, heard or directly assessed--only performance can be measured. When the test administrator fails to separate learning from performance, many problems can occur. In the context of this publication, "learning" occurs when the client knows the purpose of the test and how he/she is to respond to the test format. "Performance" is the responses (or answers) given to each test item. When a client takes a test before he/she is aware of what is involved, does not understand the instructions, misses items because he/she cannot perceive them, or "fails" a test because the item format was beyond his/her comprehension test results are invalidated. In short, tests scores must not reflect how well the instructions were understood or the items perceived, but how well the client performed after he/she knew the instructions and understood the item content. Because the purpose of testing is to obtain accurate information about the client, the evaluator must be certain that the client knows the instructions and how to respond to the test content per se. This may be done in four ways: (1) carefully selecting tests with appropriate reading levels and content, (2) increasing the number of practice items and examples prior to actual administration, (3) administering tests designed specifically for various disability groups, and (4) modifying tests to fit the needs of various disability groups. In conclusion, one major reason for inaccurate testing is the evaluator's failure to separate the knowledge required to understand the test instructions from the actual test items or content.

Negative Connotations of Tests by Evaluators and Clients ("Our facility doesn't like to use tests" and "I don't like to take tests.") - To many clients, as well as some evaluators, the mere mention of the word "test" results in negative connotations often accompanied by stronger emotions, such as anxiety and anger. Many of these feelings are at least partially justified. Often clients have a history of failure in school tests, not being selected for jobs due to tests, and generally being assigned to one or another "failure" category. Evaluators have occasionally seen the negative results of poor test use, some have little real knowledge of test selection and use, and others have serious doubts about the role of testing with disabled persons. Before tests can be successfully used, the evaluator must deal with his/her own problems as well as those of the client. The evaluator can overcome his/her concerns about testing in three ways: (1) know how to select specific tests to fit individual needs, (2) test only when necessary and have this decision written into the evaluation plan, and (3) become more generally aware of the proper use of tests. The evaluator helps the client overcome mistrust of tests only when he/she is able to look at testing objectively. After this occurs, the evaluator can help the client in several ways: First, provide the client with the exact reason for administering each test; this reason should also be written in the evaluation plan. Second, for aptitude and achievement tests provide extra occupational information. Tell the client in simple language what a sales aptitude test measures and how the results relate to a variety of sales jobs. Third, prior to testing inform the client how the results will be used, and after testing tell the client exactly what the results are and what they mean. If these recommendations are followed, the client should respond positively and you should also.

Poor Selection of Test ("I'll see what we have around here to figure this client's interests") - Test use begins with selection, and selection is based on two questions: "What do we need to find out about the client?" and "What tests will answer this?" To answer the first question, the evaluator must clearly identify what information is needed about the client. In relating needs to test use, the evaluator begins by stating the general areas where a test can be useful. For example, a picture interest inventory may be needed to help low literacy clients clarify their interests. After deciding what is needed and why it is needed, the evaluator searches for the best test that meets his/her evaluation plan. In this example, he/she considers the range of jobs covered, the item format, the ease of scoring, and the technical concerns of norms, reliability and validity. Because of individual differences between clients, several different tests are often needed to answer the similar referral questions. In addition to test selection, the level of the test must also be considered (Mausa, 1981); this is most appropriate for assessing literacy skills. Returning to the above example, if a general measure of client interest is needed, then the evaluator needs to have a wide range of instruments available--some for low literacy clients, for persons expressing interests in skilled or technical occupations, for visually impaired persons, and for those considering additional academic training. Thus, the selection of an interest inventory must consider the individual needs of the client being assessed. A quote from an article by Botterbusch and Sax (1977) dealing with the selection of commercial work samples also applies to test selection and use:

> The first decision is whether the evaluation unit is meeting client needs in terms of accurate assessment for available jobs and/or training. If needs are not being met, the second decision becomes a question of what areas of job assessment are needed for the evaluation unit. After these needs are known a thorough review of . . . available resources is made to determine how to best meet these needs . . . There has to be a great deal of analysis of what is to be accomplished during evaluation, the available jobs and training, the types of clients with whom you are working and the best way to accomplish the goals in your facility. This analysis is absolutely necessary before you can . . . select any test (pps. 35-36).

In conclusion, the evaluator must carefully select tests prior to their use. This selection should be based on what tests will provide answers to the referral questions. This section has presented some of the general problems with test use. The next section explains some general practices that will help you solve many of the testing problems

General Testing Conditions and Practices

Regardless of what tests are selected and administered, some generally accepted practices should be followed. The goal of all testing is to obtain accurate results, and good testing practices will enable you to reach that goal. Most of the suggested practices listed below are a mixture of being prepared, common sense and a concern for the client as a unique person. These general testing conditions are as follows:

Physical Environment - The testing room or area should be conducive to concentration. The temperature should not be too hot or too cool for comfort and, if possible, the humidity must be kept low. Because noise is a distraction to everyone, especially hearing impaired persons, the test room must be kept quiet; this means separated from shop or hall noises. If there is a telephone in the room, unplug it or take the receiver off the hook during the testing period.

The lighting is of critical importance. There should be no glare or bright spots on the surfaces where the tests are administered. Check this by taking a copy of the test booklet and answer sheet and sitting in various places in the room to see if the light causes glare on the booklet and/or answer sheet. Lighting becomes critical when testing visually disabled persons. While bright, no-glare light is usually the best for this population, there are some visually disabled persons who need a softer light or other special lighting. If there are any doubts, ask the client what is best and, if necessary, experiment with different places in the room and with different lighting arrangements.

Check Testing Materials - If you are administering a test for the first time, begin by carefully reviewing all materials before testing. This includes reading the administration manual and noting the materials needed for administration, the time limits, any special instructions for disabled persons, and reviewing the test items and scoring sheet. Taking and scoring the test yourself provides some insight into possible administration problem areas.

Even if you have administered the test several times and are very familiar with it, check over the list of required materials to be certain that there is enough of everything for each client scheduled to take the test. It is also a good idea to have extra pencils and answer sheets on hand.

Practice and Pretesting - One way of reducing potential discrimination against persons not experienced in testing is to use a variety of pretesting orientation techniques and practice exercises. Both of these techniques are useful with all disabled persons as well as with other persons unfamiliar with testing. Pretesting orientation (also called pre-trials) can help the client become aware of exactly what is expected of him/her before he/she enters the testing room. Pretesting orientation materials are given anywhere from a few days to a few hours prior to the actual test. For example, Weldon and McDaniel (1982) reported some increases in the scores of delinquents tested the day following the administration of pretesting orientation using the Testing Orientation Procedure. Pretesting orientation often begins with a leader directed discussion on the topic "Why are we taking this test?" This discussion gives the evaluator a chance to answer questions and, possibly, reduce anxiety prior to administration. Pretesting orientation usually includes a mock test, the purpose of which is to familiarize the client with the test instructions and procedures. This mock test should contain instructions exactly like the ones in the real test and should include several items that are similar in format, content and difficulty level to the real test. During and after the pretesting orientation the client should be able to ask questions about the testing procedure. Pre-trials also provide the evaluator with a chance to try out any modification he/she might have made in testing materials prior to actual testing.

Most tests have several practice items used at the beginning of the test to make certain that the testee is familiar with the test's content and format. The evaluator can add extra items to the practice items already printed in the test booklet. As with pretesting orientation techniques, all additional examples should be examples of the test item format and content, without being the actual items themselves. These extra practice items can be given immediately after the practice items in the test booklet. After all practice items are administered, the evaluator and the clients should carefully review each item so that the clients understand item content and format.

Pretesting orientation and extra practice exercises are not to be confused with coaching. In coaching a person is given an actual copy of the to-be-administered test and assisted in answering the test items correctly. This, of course, is simply cheating for the purpose of obtaining a high score and cannot be condoned under any circumstances. As stated above, the purpose of testing is not high scores; it is accurate scores whether high, low or in the middle. Coaching not only destroys the test's validity; it also results in placing a person in a job or training situation far beyond his/her ability level. The evaluator must be careful that pretesting orientation and practice never becomes coaching.

Explain the Reason for Testing - Prior to administration the client must be told that he/she is being tested. This explanation has two parts: First, tell the client how this test relates to information needed to answer a specific referral question. Second, tell the client what the test is designed to measure. For example, the referral question asks if the client has the ability to be a sheet metal apprentice. During evaluation planning you discover that form perception is a key aptitude in this occupation. To determine the client's aptitude he/she is administered the Minnesota Paper Form Board Test and is told that this test relates to this specific referral question. Because he/she is also told that sheet metal workers must be able to see irregular shapes and to transform drawings into finished products, this aptitude must be measured. The best way of doing this is to administer this test. Explanations should be kept short and within the client's understanding level. Don't use technical language that confuses the client.

Behavior Observations - Regardless of the assessment technique administered, the evaluator should make systematic client behavioral observations. This practice, of course, extends to testing. Carefully observe the clients during test instruction and administration and record behaviors using the procedures given in the Revised MDC Behavior Identification Form (Botterbusch, 1985). Observations made during testing are often relevant when interpreting test results, especially if the scores are very low or answers appear to be marked at random. Some of the most frequent interpretations of test behaviors are: fatigue, boredom, confusion, anxiety, and satisfaction for a good performance.

Scoring and Reporting - Scoring the typical paper-and-pencil test is a boring task to be completed as soon as possible. Studies of test scoring practices have indicated that about 24% of tests are scored incorrectly. This human error can be avoided. Inaccurately scored tests do not help either you or the client; they only add confusion to the evaluation results. There are three simple ways to insure scoring accuracy: (1) If turn around time is not a major factor or if the test has complex scoring procedures, have the test scored by a computer scoring service. (2) Have a second person, such as another evaluator or clerical person, rescore the test. (3) If there is no other person to rescore the test, rescore it yourself after a time period of several hours or overnight. An extra word must be said about computer scoring. Some tests, (e.g. MMPI, SCII) contain numerous scales requiring a separate scoring stencil for each. These tests take several hours to score and a mistake in one scale may cause an error in another scale, thus compounding the mistakes. For these tests computerized scoring services should be used to save the evaluator's time as well as to insure accuracy.

The second most common clerical error in test scores is in reporting the results. This error involves incorrectly copying a test score from one source to another. For example, in recording the score from the test sheet to the permanent record, two digits are reversed. As with scoring, the best solution is to be careful and check the work. Some common recording errors are: digit reversal, selecting the incorrect norm table, confusing the scores of different clients and recording the scores of one test in the place of another.

Tell the Client the Results - Because the client is an active participant in the evaluation process, tell him/her the test results soon after test administration. This timely communication helps reduce any anxiety or concern about the test results. Explain the results within the context of the referral questions and keep all explanations within the client's level of understanding. The explanation of low test scores and any negative results of personality tests is a common anxiety producing experience for both client and evaluator. In dealing with these situations, first accept the reality of these emotional aspects and then explain the test results in an honest, direct manner, without offering rationalizations or excuses for the client's performance.

The suggestions given above apply to anyone, regardless of his/her disability or level of functioning, who is being tested.

How to Select Tests

Because many factors must be considered, test selection is not easy. To be knowledgeable in test selection, the evaluator must combine a detailed knowledge of two areas-technical knowledge of psychometrics and practical knowledge of how to plan and conduct evaluation services for clients with a wide variety of handicaps. During this review and selection process, remember that test selection procedures have to be based on what will best assess the client. While it is beyond the scope of this publication to present all the information required to make anyone a test selection expert[1], some general considerations are as follows:

Should Tests Be Used ("Maybe some people shouldn't be tested at all.") - The first question asked when selecting a test(s) for a specific client is not "What test to use?", but "Should we use tests at all?" While tests can be used with many severely disabled persons[2], the question still to be asked is: "Is a specific test suitable with a specific disabled person?" In trying to answer this question, the evaluator must ask what prevents the use of a test(s) with a client. A client may, for example, suffer from anxiety so intense that testing, except for the simplest motor tasks, would be invalid. A severely mentally retarded person from a culturally deprived background might be more accurately evaluated using other techniques. The same is true for a person who is deaf/blind. These are only examples. The evaluator decides which clients for whom testing of any kind would not produce accurate results. Therefore, the first step in test selection is to ask what tests would give accurate information on a particular client. If the evaluator finds that no test provides the needed information, then he/she should use other assessment techniques.

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[1] The evaluator who does not have training in psychological testing should attempt to take a course or two in testing at his/her local college or university.

[2] For testing specific disability groups see: Bauman, 1976; Scholl and Scur, 1976; and VanderKolk, 1981 for blind; Levine, 1976; Sullivan, 1982 for deaf; and Solomon, 1982 for mentally retarded.

Ask Questions About the Test ("What does this test really do?") - In test selection the evaluator carefully reviews the test, its manual, the answer sheet, etc. He/she studies the reading level, administration procedures, clarity of instructions, norms, reliability and validity. This review begins by reading the stated purpose of the test in its manual, then reviewing the test per se, plus any research to determine if the test lives up to its claims. Critical reviews in the Mental Measurements Yearbooks, Test Critiques, journals, and some textbooks should be read. One excellent source of test information is the books published by the test corporation of America (i.e., Sweetland and Keyser, 1983; Keyser and Sweetland, 1984; and Krug, 1984). An obvious point is to lightly regard the publisher's advertising. When reviewing a new test for possible use, the purpose of that test within the evaluation program and the general characteristics of the client population should be kept in mind. In other words, the test should be assessed on its technical merits and on the place it will fill in the evaluation program.

Several aspects of test review were given above; four of these will be expanded in the sections below:

1. Reading Level - The reading level of a test applies to all tests having verbal content that are not reading or verbal comprehension tests. The idea is to separate reading skills from the to-be-tested trait or aptitude. This is analogous to the separation of learning from performance discussed above. Some examples of tests requiring reading are items in mechanical aptitude and arithmetic "reading" tests, interest inventories and personality tests. Because the purpose of reading or verbal comprehension tests is to measure the person's reading achievement or verbal abilities, it is not appropriate to determine the reading level of these tests; these measurements simply could not be done if the items were written at a level readable to everyone. Many test manuals will list either an estimated reading level or give a reading level based on a formula. Most reading level formulas involve counting the number of syllables in each word and the number of words in each sentence. These are converted by regression equations to grade levels. Most tests are written at the fourth, sixth, or eighth grade levels.

   The test user compares the test's reading level with the reading level of the client(s) who will take the test. Reading level can be determined on the basis of job and education history or by administering a reading achievement test very early in the evaluation program. Unless the client has a job history indicating skilled clerical, technical, or professional work or education beyond high school, it is probably better to administer a reading test. Comparing of the grade equivalent reading level required for a test with the client's level of formal education should not be done; most schools use social promotion, making it possible for functionally illiterate persons to be graduated.

When selecting the tests for the evaluation unit, make every attempt to select tests that cover the entire range of client literacy skills--from none to high school level and beyond.

2. Norms - Most tests relate the individual's score(s) to the scores of groups of persons who have taken the same test; norms compare a single score with the scoring distribution of a specified sample. Because it is very important to compare the client's performance with the "right" group, the norm or norms must be carefully selected in test selection. Carefully read the description in the test manual of all norming groups and ask if all relevant information on the sample(s) is included: geographic distribution, date of testing, age, sex, employment, level of education, minority representation and handicapping conditions. After reading the descriptions of the norm group(s), ask yourself one essential question: Is this group appropriate to compare my clients against?

   The most commonly used norm groups are: grade school and high school students, general population, persons in a specific training or apprenticeship program, persons employed in a particular job or industry, or institutional norms. While good arguments have been made for using client norms (e.g. norms developed on deaf or mentally retarded persons; see Patiron, 1967), it is the firm opinion of the authors that clients should be compared with employed worker or general population norms. Sheltered employment or client norms have little relevance in vocational decision making. Thus, employed worker norms should be used for vocationally related aptitude and skills tests; student or general population norms should be used when these are not available. Therefore, when selecting tests always look for well-described and current norms on employed workers or persons in the general population. Until fairly recently almost all tests (called "norm referenced" tests) used statistical norms; there is presently a trend among many in special education to replace statistical norms with criterion-referenced tests.

   Criterion-referenced tests are designed "to assess the learner's ability to complete skills or tasks representing a specific domain..." (Hupp & Donofrio, 1983, page 18). These tests "compare the performance of the individual being tested against the content of the material to be acquired or learned" (Mauser, 1981, page 31). From these two definitions it can be seen that criterion-referenced tests differ from norm-referenced tests in one major way: the person's performance is compared to previously established criteria, not to the performance of a particular group. The test content is based on previously agreed to performance standards and the person is judged on what degree he/she reaches these standards. "The results of such tests are not expressed in levels of proficiency such as percentiles, stanines, grade equivalents, and so forth, but are stated in terms of skills mastered" (Mauser, 1981, page 31). In many ways criterion-referenced tests are developed like work samples--they begin with the careful study and task analysis of the to-be-learned skill and continue with the development of competency measures indicating the attainment of these goals. Criterion-referenced tests are closely related to content validity. While the vast majority of the tests used by the evaluator will be norm-referenced tests, he/she must be capable of selecting criterion-referenced tests. Some standards of a well-developed criterion-referenced test are: (1) content is specific, (2) variability of scores is not desired; large number of perfect or near-perfect scores is expected, (3) tests are very sensitive to the results of learning and instruction, (4) evaluates individual performance in relation to a fixed standard; client competing against self, (5) depends on task analysis, and (6) geared to providing information for use in planning instruction (modified from Mauser, 1981).

This section has presented information on test selection. However, test selection does not take place in a vacuum; it must be considered as part of a more general model of test use.

A Model for Test Use

Throughout these pages we have talked about many factors effecting the use of tests in vocational evaluation. These can be be divided into: (1) the use of tests within an evaluation program and (2) the use of a specific test to serve the needs of a specific client. The most successful testing program administers the most appropriate test to the client so that accurate and useful information is obtained.

A model for test use is outlined on Figure 1. The left side of the figure ("The Test") emphasizes that tests are part of the total evaluation program, which centers upon the client population served, the local job market, local educational and training opportunities, and the implicit or explicit goals and philosophy of the evaluation unit. In establishing or refining an evaluation program, first decide if some of the information needed to assess clients is obtainable from testing (Step 1). If the evaluator realizes that some tests will be helpful to his/her clients, then Step 2 is establishing test specifications. Some examples of specifications are: (1) a test of mechanical aptitude that does not require any reading skills; (2) a test of literacy for low functioning persons that does not have childish content; or (3) a nonverbal test of general learning ability that has Spanish language directions. In addition to these specifications, consider other factors: cost, norms, reliability, validity, scoring procedures, and cultural bias.

After establishing specifications, the evaluator finds and reviews tests meeting these specifications (Step 3). It is critical that these specifications be established first. If a test is purchased prior to determining specifications, then there is the temptation to "fit in" the new test. The evaluator must always keep control of the initial selection and use of all techniques; this means setting standards and then finding products that fit these standards.

There are several sources of information to help you select tests. This publication is one. Another is to write the numerous test publishers and ask for a catalogue. Other sources are various books on testing, professional journals, the Mental Measurements Yearbooks (Buros, 1978), Tests (Sweetland and Keyser, 1983), Tests, Supplement

(Keyser and Sweetland, 1984), Test Critiques (Keyser and Sweetland, 1984) and A Counselor's Guide to Vocational Guidance Instruments (Kapes and Mastie, 1982). After making the preliminary selection of tests that appear to match specifications, the evaluator orders specimen sets from the publisher and then carefully reviews all material. An interesting review method is to take the test yourself. This helps you judge the content, estimate its reading level (if this information is not in the manual) and determine its appropriateness for the client's specific populations served by your evaluation unit. You may also try out the test on some clients; if this is done, make it very clear that the test is being assessed and not them. After taking the test, score it and then interpret the results. These are subjective methods of reviewing a test.

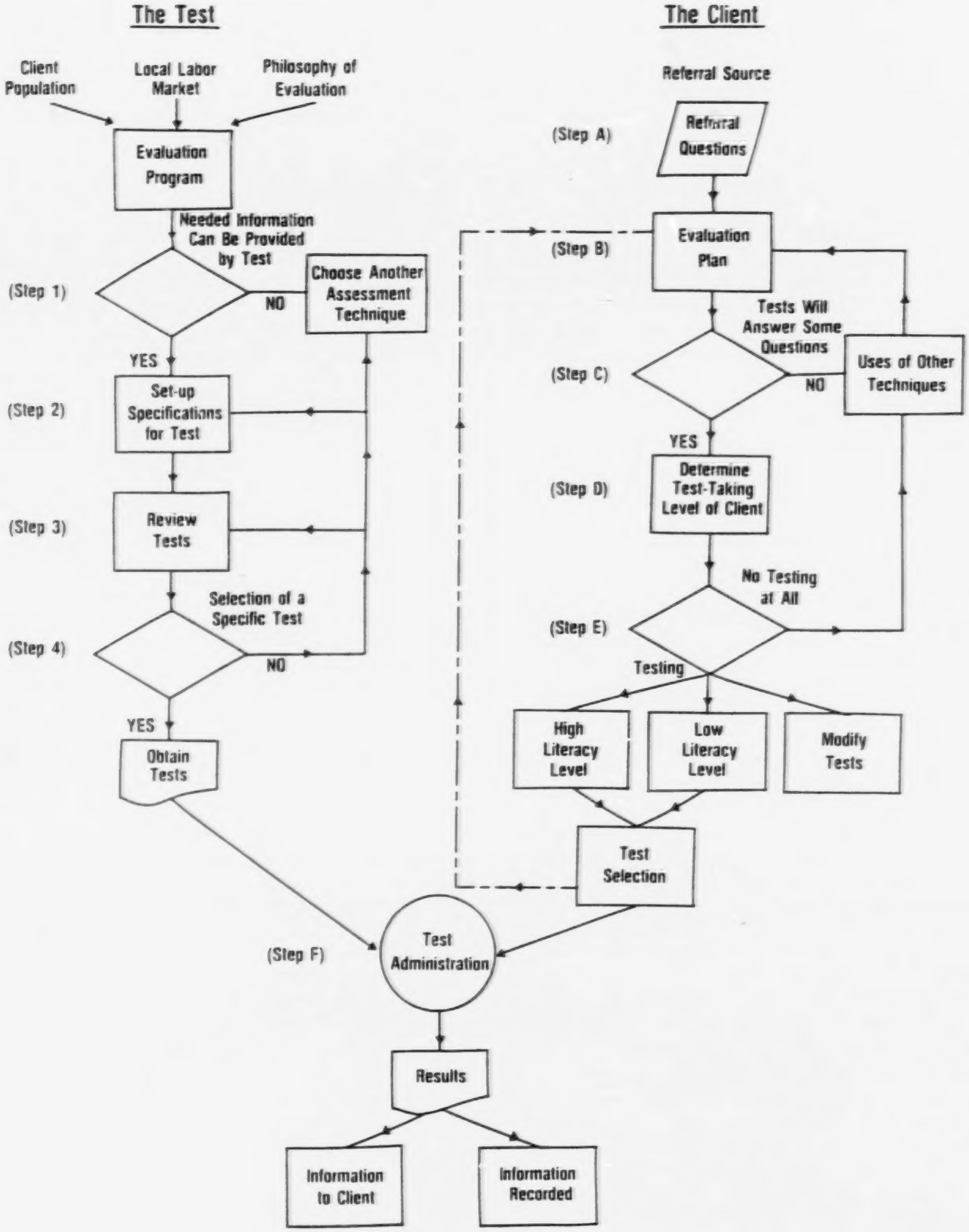
More objective procedures must also be used. Carefully read the test manual to learn about norms, reliability, validity and reading level (see above). Administrative and scoring time, need for computer scoring, reporting results, etc. should also be considered. The evaluator may want to prepare a written outline of the critical points; the test review outline on page 39 can serve as guide.

After reviewing the proposed test, the evaluator must decide if the test will be useful in obtaining accurate information for some clients (Step 4). This decision is based on a critical review of the test materials, the needs of the evaluation program and the characteristics of the clients who will take the test. If the decision is to reject a specific test, then other potential tests are reviewed. If there are no other potential tests, the evaluator may choose either another assessment technique or revise the test selection specifications.

In testing a specific client (the right side of the figure), the process begins with the referral questions (Step A). If these questions are precise, then a detailed evaluation plan is developed at intake. If not, the evaluator needs to obtain additional information prior to developing the plan. The resulting evaluation plan (Step B) is prepared to answer specific questions about the client; during this phase the evaluator selects the various tests, work samples, etc. that will answer the referral questions in the most accurate and efficient manner. With regard to testing, the first question is: "Will testing be necessary to assess the client" (Step C). If a negative answer is given, then other techniques are used.

If the answer is "yes", the next phase is estimating the test taking ability of the client (Step D). Some suggestions for this are given on pages 7 and 8 and need not be repeated. After the client's literacy level and other test taking skills are determined, some decisions can be made (Step E). If the client lacks minimal test taking skills, other techniques must be used and the evaluation plan revised to reflect this. While literacy or test taking skills obviously occur on a continuum, Figure 1 has simplified this continuum by giving only three testing options. The first is for "high literacy" clients, a term used to indicate a client who can take almost any standardized test. The second, "low literacy," implies the use of non-reading, nonverbal, or low reading tests. The third choice is to modify specific tests to meet clients needs (see page 16). The evaluator selects the actual test based on the information needed and the client's test taking skill level. This selection is recorded on the evaluation plan (the dotted line in Figure 1).

Figure 1: A Model for Test Use



In Step F, actual test administration, the client and the selected test interact. (The general testing conditions and practices starting on page 7 should be used at this time.) If possible, the test should be administered according to the instructions in its manual; any changes or modifications must be made in a standardized way. Even though the test and client have been carefully chosen for each other, there still can be unforeseen problems. The evaluator must be aware of these and make sure the client understands the instructions and is not too anxious to take the test. Following administration and scoring process, the results are recorded and shared with the client. The client must be told the meaning of the results, how they will contribute to the rest of the evaluation and, especially, how they may effect the client's future goals.

Part I provided the evaluator with some general guidelines on the proper use of psychological tests within the evaluation program. If some of these suggestions, recommendations and procedures appear to be too general, remember that each facility is a unique combination of clients, programs, referral sources, staff and financial resources. In addition each facility exists in a unique community. Therefore, to set forth a highly regimented guideline for test use would be impractical to the evaluator and would place the writers in a position of assuming that they know every facility and its procedures. The ultimate responsibility for the appropriate use of tests depends upon the professional judgment of the evaluator. The first part of this publication provided general information on using tests without modification. The second part of this publication will cover the reasons for and methods of test modification.

Part 2 - Test Modification

Under the best conditions test use in evaluation and assessment is not without problems. These problems are compounded when the evaluator administers tests to severely disabled persons, such as visually disabled, hearing impaired and mentally retarded. When the evaluator tests persons different from the group(s) the test was designed for and normed on, the problems in obtaining accurate results increase in both number and complexity. The instructions, item format and content, methods for answering items, and many other specifications make a particular test useful for specific population(s). Changing the population of test users often requires changing the test procedures or locating a test specifically designed for a particular group of disabled persons. Thus, evaluators must be willing to select appropriate tests and/or to modify these tests to meet the different needs of various handicapped groups. Part 2 of this publication is designed to provide you with some practical methods for test modification for three specific disability groups: blind, deaf, and mentally retarded.

Although modifying testing materials is a difficult task requiring professional judgment, evaluators have always made these changes and most likely will continue to do so. In spite of the extra effort required, there are two reasons why testing of these groups occurs and why test modification is needed:

1. As stated in the first part of this publication, tests are potentially useful assessment tools for most disabled persons. These same reasons apply to the severely handicapped. Vocational rehabilitation personnel are not the only persons concerned with the modification of tests to better assess specific disability groups. Solomon (1982) reported modifications made by the Educational Testing Service to adapt the GRE Aptitude Record Examination for blind students. The U.S. Office of Personnel Management (Heaton et al., 1980) published a short monograph on modifying civil service testing conditions for disabled persons.

2. In spite of the efforts of several test publishers, there is still a lack of testing materials designed for both disabled persons and non-English speaking persons. Changes in instructions and format would make many tests more useful. Test modification increases the number of potentially valuable evaluation techniques, thus giving the evaluator more options in providing client service. Low sales volume is the major reason for the unavailability of appropriate testing materials from commercial publishers. It simply does not pay to design special forms, retest items, change instructions, etc. when persons with special test needs make up such a small percentage of the market.

There are also technical reasons for the lack of tests for disabled persons. In a review of test use for the blind, Bauman and Kroft (1979) reported two of the technical problems encountered when attempting to develop special tests for the blind: (1) Because tactical discrimination varies between blind persons, tests using this sense as a communication method may only be assessing discrimination ability. (2) There are problems in establishing the validity of such tests and in developing adequate norms.

Some General Cautions

Although this publication advocates administering and modifying test and testing procedures for many severely disabled persons, the evaluator must be very cautious in his/her attempts at test modification. The first decision should not be to modify a test; it should be to search for an already constructed test that meets your specifications. The second decision is to look for another technique that would provide you with the same information. Only after these two decisions are made should the evaluator begin to modify tests.

The idea behind any change in testing materials is to separate learning of the test instructions from actual performance on the test content, per se. Before the evaluator can measure the client's performance on a test, he/she must be certain that the client knows how to respond to the test and that the client clearly and accurately perceives the test content. In short, the client's test score must not reflect how well he/she understood the instructions or could perceive the items, but how well the client "knew the answers" once he/she fully understood the instructions and the item content.

Before getting into the details of test modification for blind, deaf, and mentally retarded, there are some general cautions to be aware of and some general comments that apply to all test modification:

1. There is a difference between changing instructions and test item format for better understanding and giving away answers. The test user does not obtain accurate information by coaching the client on items found in the test. (See page 8).

2. Testing is often a very tiring process and since most people do not perform at their optimum levels when fatigued, it is best to keep testing sessions short. Fair and Birch (1971) found that rest periods increased the scores of physically handicapped children on sections of the Advanced Stanford Achievement Test. Morris (1974) described a modification in the 1973 Stanford Achievement Test in which the test was given in two sessions rather than the one recommended in the manual. Unfortunately, there appears to be no research to indicate the length of a testing session for disabled persons. Obviously, it would differ with age, disability type and severity of disability. Until research indicates a clear answer, the authors suggest that testing sessions be no longer than one hour without at least a 10 minute break.

3. The content of all test items should be carefully reviewed. This is especially true when using personality tests designed for nonhandicapped persons. When administered to a blind or deaf person, the same items could result in a different interpretation. For example, personality test items about physical mobility (e.g. "I am afraid to travel alone." or "I do not like to drive a car.") or social sensitivity (e.g. "I feel people look at me as if I were odd." or "I sometimes avoid people.") may represent realistic concerns and fears for a handicapped person and, thus, are not to be taken as signs of an emotional problem. Test items calling for specific visual (e.g. the colors of

specific objects) or hearing (e.g. the sound made by a particular animal) knowledge should be carefully examined and assessed. If such obviously inappropriate items exist, the evaluator should consider selecting a different test. If he/she chooses to use a test containing such items, the resulting score must be interpreted with caution.

The content of achievement and aptitude tests must also be reviewed. Both Sullivan (1982) and Bauman and Kropf (1979) suggested that excessive and complicated diagrams, figures and charts be avoided in tests for visually disabled persons. In addition, Sullivan suggested the avoidance, if possible, of letters that look similar, such as "B" and "D", "M" and "N", and "Q" and "O." When testing deaf and mentally retarded clients, the opposite is often true; the test should be highly visual and avoid verbal content as much as is reasonable.

4. Personal interaction between the client and the test administrator may effect test results. Fuchs, et al. (1983) investigated the effects of familiarity on 34 pre-school handicapped children; their test scores were significantly higher on individualized tests when given by their teacher, as opposed to a stranger. Stoneman and Gibson (1978) investigated the interaction between the testing setting and the familiarity of the examiner. They found that test scores were higher in an unfamiliar small testing room while being tested by a familiar person. A much more disturbing source of bias was reported by Elovitz and Salvia (1982). Investigating the effects of "students' facial attractiveness on the judgments of practicing school psychologists" (page 339), they found that school psychologists rated the more attractive students as having greater potential than less attractive students. While these studies all used children as subjects, the concerns that they raise can be generalized to adults. The evaluator must be aware of any bias toward a particular person or a group of persons and take steps to either prevent or control future bias. In other words, the evaluator must be careful of subtle and not-so-subtle verbal or non-verbal cues during test administration that may effect the client's performance.

5. Tests are classified either as speed or power tests. Speed tests are constructed so that some or most examinees will not complete the test. Power tests have lengthened or no time limits and anticipate that each examinee will attempt each item. While most commonly used tests could be classified as power tests, speed is still of some importance. (Speeded tests are most commonly found in the clerical areas, such as word and number matching, coding, and name comparison.) Most tests assume that the examinees have the necessary visual and/or verbal skills to be administered unmodified tests. Of course, this assumption often is not true when testing disabled persons. If the evaluator wants to increase a test's time limits, he/she should first consult the test manual to determine

if the test is described as a power test. If it is a power test, then the time limits can probably be increased without too much effect on the norms and validity of the test. While it is much more difficult to make a general recommendation for speeded tests, we suggest gradually lengthening the time limits until about twenty-five percent of the clients attempt all items. Tests with increased time limits must be interpreted with extreme caution.

The lengthening of time limits is a very common test modification. McKinney (1983) reported the administration of a minimum competency test given by the State of North Carolina to all 11th grade students, including handicapped students. Twenty-three percent of the disabled students were given longer than the prescribed time limit. Although no statistical data were presented, the implication was that the extra time increased test scores. In her description of modifications of the Stanford Achievement Test for visually disabled persons, Morris (1974) used different time limits for different formats. When Braille forms were used, the original time limits were increased by multiplying by 2.5; for large print format, the multiplier was 1.5. The evaluator wishing to modify tests for the blind should start with these two multipliers. Unfortunately, the authors were not able to locate comparable data for increased administrative times for the hearing impaired and the mentally retarded.

6. Most tests used in vocational evaluation are designed for group administration. Research studies on coaction (i.e., a group in which each person performs his/her individual task at the same time and in the presence of others) with "normal" populations has demonstrated that people perform better when tested in a group (Dashiell, 1930; Nobel et al., 1958; Botterbusch, 1974). This finding holds even when the group is as small as three persons. Because the results most likely apply to handicapped persons as well, tests should be administered to small groups when possible. This opinion, however, is not universal; Sullivan and Vernon (1979) stated that "group testing should generally be avoided with hearing-impaired children" (page 272). Our belief is that individual administration of a group intended test may be considered: (1) if the client is extremely anxious and fearful of the testing situation; (2) if the communication between the examiner and client would be disruptive to other clients or compromise the client's privacy when given in a group; and (3) if the test answers must be given verbally to the examiner.

7. Changes in test administration procedures or in the test per se should be an organizational policy that is decided on and agreed to prior to the actual changes (Hartman and Redden 1982). All changes must be written and be available to test users. When modifying a test, the test user risks compromising the norms and validity of the test; if tests are changed only after discussion of the reasons

and the modifications, these risks are reduced or at least made known.

This public acknowledgement of change should be carried over to reporting functions. In recording test results any test modifications should be noted on the client's records; this will aid during interpretation and report writing. Observations of behavior during the testing period should also be recorded. If the client's evaluation report is to contain specific test results, these should be interpreted in light of any changes that were made. For example, a reading comprehension test result could be accompanied by an explanation that the time limits were not followed because the evaluator wanted to know how well the client understood what he/she read and not just how fast he/she read.

Specific Disabilities

The remainder of this part presents some methods for test modification for three disability groups: blind, deaf and mentally retarded. These methods are general and are intended to serve only as guidelines; they are not to be taken as the final word. The reader will note that while we discuss each disability group as if it were a single entity, in reality these are not homogeneous groups. Persons with the same disability differ greatly both in the severity of their disability and in their personal reactions to that disability. A final caution must be issued; because learning disabilities are a highly complex group requiring specialized testing, they are not included in this publication. Learning disabilities are not to be confused or classified with mental retardation.

Visually Disabled - Legal blindness is usually defined as having "vision in the better eye when corrected of less than 20/200 " (American Medical Association, 1934, page 2205). Twenty/two hundred means the visually disabled person sees at 20 feet what a fully sighted person sees at 200 feet. Two not-so-formal definitions are of more practical value to the evaluator. The first, travel vision, depends to a large degree on the individual and may be defined simply as the ability to walk or use public transportation unaided. The second definition, used by the National Health Survey (1959), is the inability to read ordinary newspaper print with glasses. Of these three definitions, the third has the closest relationship to the concepts of this publication. Within the context of this publication, blindness is the inability to perceive and read sentences, words, letters, numbers, equations, etc. in the form in which they appear on a standardized test or test answer sheet. In testing visually disabled persons the question is simply "Can the client see well enough to take a specific test in its original format?" If not, the problem becomes one of modifying the test so that visual problems do not interfere with or effect the person's ability to perform on the test. In other words, we must make certain that test results reflect the client's skills, interests, aptitudes, etc. and not his/her visual handicap.

The client's life history effects test results and should be considered during the process of test selection, administration, scoring and interpretation. The three major factors in the client's life that effect his/her test taking skills and test performance are: (1) age of onset of blindness, (2) emphasis on verbal skills, and (3) experiences unique to visually disabled persons. The age of onset is the most obvious factor. If a person has functioned "visually to an age where he had already established concepts such as shape, color, and visual aspects of the environment like clouds, he/she can use these concepts in the testing situation" (Bauman, 1973, pages 94-95). For example, a 23 year old client blinded in an accident (i.e. adventitiously) knows what a house looks like and that trees are green in summer. Whereas, a person of the same age blind since birth or from early childhood may not know these concepts; his/her experiences are totally different from the client who had normal vision until recently. Generally, the later in life the person became blind the closer his/her experiences are to the normal population and the more likely he/she could respond to testing materials having visual components.

The second factor effecting test results is the tendency for most blind persons to be overly verbal. Raised in a world where hearing is usually the major source of sensation, an emphasis on speech is very common. This "verbalism" means that a client may appear to have a wide range of knowledge because he/she can define terms and talk about a particular subject. In reality, the knowledge is only words--not experiences or real knowledge.

Third, a visually disabled person has different sets of experiences that set him/her apart from the normal population. This is true even for a child reared in a middle class home and especially true for children from lower social classes and those reared in institutions. "Their life experiences have been limited or changed not only by the obvious effects of poor vision itself, but probably by many other factors, of which the following are only a few examples:

> Overprotection - In many cases family, friends, and even school staff have, out of genuine concern for the safety of the individual, out of pity, or merely out of a wish to be helpful, done so much for the child that he has not had normal learning experiences...
>
> Exclusion - Within school or even in college he may have been excluded from certain courses or extracurricular activities which are regarded as important learning materials for sighted students... This has an effect upon academic gains presumed to come from such classes, upon the individual's place in the school social structure, and upon his concept of himself and of blindness. The effects are found not only in tests of specific knowledge but in interest and personality measures as well.
>
> Lack of Appropriate Learning Materials - Particularly in the evaluation of achievement, the psychologist (evaluator) heeds assurance that the child has had appropriate resources for learning..."
>
> (Bauman, 1973, page 96)

In conclusion, when testing blind clients, the evaluator must not only be aware of the perceptual problems directly effecting the mechanics of testing, but he/she must also realize that the handicap effects the person's knowledge, skills and personality.

Several common test modifications, intended for evaluators and others testing visually disabled persons, are presented below. If the evaluator wants to completely redesign and renorm the test, they should read Morris (1974); this article is a case study of what should be done to completely modify a test. One note of caution: Solomon (1982) notes that any adaptation in a test for visually disabled will almost always result in an increase in the administration time.

1. Use of Pretesting Orientation Techniques - Although not strictly a way of changing test materials, the use of pre-trials (i.e. pretesting orientation techniques) can help the client become aware of exactly what is expected of him/her prior to entering the testing situation. Pretesting orientation materials are given anywhere from a few days (Greenberg, 1980) to a few hours before the actual test is scheduled and could begin with a leader directed group discussion on the topic of "why are we taking this test?" This gives the evaluator or test administrator a chance to answer questions and, hopefully, reduce anxiety prior to administration. Pretesting orientation usually includes a mock test, whose purpose is to make the client familiar with the test instructions and methods. This mock test should contain instructions exactly like the ones used in the real test and should include several items that are similar in format, content and difficulty level to the real test. (Pretesting orientation techniques MUST NOT include any actual items from the real test.) During and after the pretesting orientation the client should be able to ask questions about the testing procedures. Pre-trials also provide an opportunity for the evaluator to try out any modifications he/she might have made in testing materials prior to actual testing.

2. Large Print Tests - Large print tests may be used by partially sighted persons. In modifying tests for large print, all client instructions and test items should be retyped in an easy to read format. In retyping items, be sure that there is enough space between each item to prevent confusion.

   Many tests use separate IBM or NCS machine scored answer sheets; often these are confusing for persons with no visual disability. Separate answer sheets should be avoided when the client can respond by marking answers directly on the test form (Morris, 1974). If the facility has an IBM Selectric typewriter they can try using "orator" type which has capitol letters approximately 3/8 of an inch high. "Large type" typewriters are also available. Once the test has been modified and retyped, it will have to be reproduced. Photocopying and mimeographing are two common methods available to almost every facility; however, frequently the reproduction is poor quality. If the test is to be reproduced, the evaluator should consider the use of offset printing. Because of copyright laws, the evaluator must have written permission from the test publisher prior to duplication of tests and related materials.

   (Some large print tests are available from the American Printing House for the Blind.)

3. Braille - For clients who read braille, special forms of braille tests can be ordered from the American Printing House for the Blind. As in the case of large print tests, these are mostly reading and mathematical achievement tests. If the facility has the resources to prepare and reproduce braille material, they can translate the test into braille, using modified instructions and formats. As stated above, the time periods for using braille tests must be extended because a person reads braille only about 1/3 as fast as a sighted person reads print.

4. Repeat Instructions to Administrator - A simple way of making certain that the client understood the instructions is to have him/her repeat them back to the administrator in his/her own words. This enables the evaluator to become immediately aware of any misunderstandings on the part of the client. It may also give the client self-confidence to be told by the evaluator that he/she understands the directions. In group testing it becomes very lengthy and tedious to have each client repeat the instructions. This is avoided by having a monitor for each client so that clients could repeat the administration instructions simultaneously to their respective monitors. A closely related technique is to have one client who knows the instructions explain them in his/her own words to the other clients. This method could also be used to provide the evaluator with feedback for future refinements in the instruments.

   There are two general strategies for repeating test instructions. The first is to have the evaluator read the entire set of instructions and then have the clients explain them back to the evaluator. Practice items or exercises would be administered immediately after their instructions were given. While the clients are taking the practice items, the evaluator would watch for signs of disinterest, anxiety, frustration and confusion. After all have completed the practice exercises, the evaluator carefully reviews the exercises and again answers any necessary questions.

   In the second method, the evaluator pauses after each segment of the instructions and has the clients repeat the instructions back to the evaluator. Although this method takes more time than the first one, it is more likely to yield increased comprehension, especially if the clients function at a low level. Following the completion of the instructions, the practice exercises are administered, scored and discussed.

5. Sort Test Items into Piles - If the test consists of items answered by "true" or "false," "yes," or "no," or other opposites, then each item can be typed in large print or translated into braille and placed on a separate card. After reading the question, the client places the card on the appropriate pile. When the test is completed, the evaluator scores the test from the cards in each pile. This sorting method

is most appropriate for personality and interest measures. Cross (1947) and Potter (1947) modified the Minnesota Multiphasic Personality Inventory (MMPI) for use with the blind. After each item was typed in braille on a separate card, clients read the items and placed each card in one of three piles: "true," "false," or "cannot say." Their reports indicated that the clients had no trouble sorting the items accurately. In using this sorting technique, the items must be numbered and administered in order. Because tests like the MMPI are scored using many "keys," hand scoring is both tedious and prone to errors; therefore, it should be avoided if possible. Once the client has finished sorting the cards, the evaluator marks the responses on a standard answer sheet for machine scoring. As a check for accuracy the completed answer sheet should be rescored by a second person before it is sent to the scoring service.

6. Present Material Orally - One of the most commonly used methods for testing blind persons is to present the material orally, either by reading aloud or by a cassette recording. Advance preparations are needed for oral test administration. Before developing oral administration materials, the evaluator should determine if a commercial recording of the instructions exists. If not, the following steps are taken: First, check the content of the test for any words that are difficult to pronounce and then look up the correct pronunciation in a dictionary. Second, carefully read the instructions and change any that are not consistent with the new method of test administration. For example, if the instructions call for the client to read each test item and then mark the answer on a separate answer sheet, these should be changed to state that the test administrator will read the items and the clients will record their answers with a braille stylus. The evaluator should change only those instructions that are absolutely necessary for administration. Of course, all revised instructions should be written and pretested before actual administration. The test items per se are administered in a clear voice without sounding bored or tired. The number of each item should be read first followed by reading each item twice; there must be a pause between items long enough for the client to record the answer.

If the material is to be read aloud each time the test is given, two additional steps are taken: (1) If several persons are to administer the test, they should agree on a common pronunciation of difficult words and (2) persons administering the test should not have accents that are not readily understood by the clients.

Test administration by tape recorder has several advantages over reading the test each time it is given: (1) It provides for greater consistency in administration. (2) It saves the evaluator from having to repeat a series of test instructions many times. (3) The use of recordings may save personnel time. Instead of requiring both a test administrator and a monitor for a small group, recorded instruction requires only a monitor.

The evaluator must use quality equipment to record the test instructions. Instead of a cheap cassette recorder, use a good quality cassette or reel-to-reel. The master recording can be duplicated on a cassette tape. During test administration, the most obvious concern is to make certain that the client can hear the recording. Distortion is another more subtle problem. Some cassette recorders distort the higher frequencies of the human voice; this is especially true when the volume is turned up. Partial compensation for this problem is achieved by starting with a good quality cassette and using the best audio equipment within the resources of the facility.

There are four problems with oral presentation of test material. First, the client cannot go back to items he/she may have missed or wants to check again. Second, hearing someone read a test at a set pace or listening to a recording is often very boring. Third, reading a test increases the time limits. Fourth, because the client's pace is determined by the recording, this method must not be used with speed tests. Although these are problems, they are not serious enough to prevent the oral presentation of testing material from being one of the most effective methods for testing blind persons.

7. Recording Client Responses - In testing any client it is important to have procedures for accurately recording responses. Since blind persons cannot use the standard separate answer sheets, other methods must be used. The easiest way of recording a client's answers is to have him/her speak the answers out loud. The evaluator records this on the appropriate standard answer sheet. However, this method is not problem free. Since the client is speaking his/her answers out loud, only one person can be tested at a time. Bauman (1973) points out that:

> While individual reading and oral answering of a test may be comfortable, it does deprive the testee of the privacy the sighted person has when he reads a test for himself and records his answers by paper and pencil procedures (page 98).

There are other ways of recording the test responses of visually handicapped persons. Multiple-choice, multiple-purpose answer sheets are available from the American Printing House for the Blind in both braille and large print. The use of separate answer sheets is an economical way to test several persons at once. Since most standardized tests are designed and normed for separate answer sheets, the use of either braille or large print sheets is closer to the original norming procedures than are other methods.

Another method is to record answers with a typewriter or stylus. The following paragraph describes the problems involved with this procedure: The blind client who is comfortable with typing or braille may use either to indicate his/her answers. In group testing it is, however, important to keep in mind that the number of strokes typed or the number of punches made by the braille stylus can betray the responses of one client to another. Thus, a slow or dull person can easily take advantage of the quicker responses of another client to obtain the correct answers. This is particularly easy with true-false items. In typing, the difficulty may be avoided by having the client type only one letter "T" for "true" and "F" for "false." In braille writing, a solution is found in the use of "C" for "correct" and "I" for "incorrect" (each giving two clicks), to which may be added an "E" for "either", if provision is to be made for a doubtful response. (Bauman and Hayes, 1951, pages 26-27).

Many tests contain items requiring the client to remember a series of words and then to record the appropriate response. Hayes (1939) gives examples:

Which of these five things does not belong with the other - potato, turnip, carrot, stone, onion?

If these items were arranged in order, what would be the middle one on the list: gallon, gill, bushel, quart, pint? (page 85)

If the client is using a braille or large print separate answer sheet, he/she would merely record the number of the appropriate response. If a typewriter or stylus is used, the client would type or write the first letter or two of his/her response, thus saving the time and energy needed to write the entire word. A similar method can be used for those sections of some reading achievement tests asking the client to rearrange a jumble of words to make a sentence. Here the client is asked to record the first and last word and not the entire sentence.

8. High Tech - Most of the testing hints and instructions given above do not require expensive or sophisticated equipment. In recent years computers and other high tech equipment have been developed and/or modified for increasing the communication between the visually disabled person and his/her environment[3]. Some of this technology can be applied to testing. Potential useful devices for testing are divided into three groups, according to the sensory mobility used for communication: (1) tactile devices for totally blind persons, (2) visual enlargement devices for partially blind persons, and (3) devices using synthetic speech. Some examples of the commercially available products in each group are given below.

   The Optacon is a portable device that converts printed material of all languages and symbols into a tactile form. One index finger is placed on the tactile array, which is approximately one and a half inches long and one inch wide. The other hand moves a miniature camera across a line of print. Because the tactile display reproduces whatever the camera "sees", the device can be used for any language as well as symbols, such as mathematical notations. A person trained in the use of this device could be administered regular test materials, thus avoiding the need for modification. The major advantages of this device for testing are that the client can move at his/her own pace and that no special test materials need to be developed. The chief problem appears to be that because special training is needed prior to use, many clients could not be tested in this manner.

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[3] A recent summary of computers and other high tech aids and issues for disabled can be found in Discovery '83: Computers for the Disabled (Janet E. Roehl, editor).

Partially sighted persons could benefit from a variety of devices that enlarge print. Devices, such as the PortaReader II by the Apollo Electronic Visual Aids, use a video camera and monitor to enlarge print from any source. The user places the reading material under the camera and moves it as needed. At the same time, he/she is viewing the enlarged image in the monitor. Apparently, no special training is needed. Like the Optacon, enlargement devices permit testing without modifying materials.

The use of closed circuit television for testing partially sighted children was described by Brand (1976), a South African psychologist. After using the television to magnify and enhance the image clarity of a picture projection test, he displayed the test material on nine monitors. He found that tests given on the monitor resulted in significantly more organized protocols and greater logical thinking.

While perhaps not as useful for testing as the PortaReader, there are also large print computers. Visualtek produces a fully programmable personal computer that displays letters and other characters on the monitor screen in user selected sizes up to a maximum of about five inches. If the testing program is large enough to justify the expense, the evaluator could place the desired test on floppy disks and then develop new instructions for use with this media. It is possible that the test could become largely self-administered. As with all other modification of testing materials, the user must first receive permission from the publisher to make these changes. Because of the ease with which software can be duplicated, obtaining this permission is especially important.

There are also devices to convert print into synthetic speech. The Kurzweil Reading Machine consists of a glass surface and a scanner. The person places the material to be read on the surface and uses controls to select various functions, for example: the speed of the reading, repeating previous lines, spelling out words, and marking words and phrases for future reference. In testing, the evaluator would place the test over the glass (like in a photocopier) and the test would be "read" to the client, who could record his/her answers on a tape recorder. Although this would take a considerable amount of time, it would give the testee privacy and allow him/her to work at his/her own pace.

No device should be used in testing if the client is not at least familiar with it. The purpose of the test is to determine information about the client's knowledge, abilities etc. in a specific content area; it is not to test his/her skill in using a new piece of equipment. In an article describing a testing program for handicapped students in New Jersey, Greenberg (1980) suggests that communications devices be used if students use them in the classroom. Extending this concept one step further, the evaluator can test using these machines if the client either uses them in his/her daily life or if it is reasonable to expect that these devices could be used on a job.

The eight practical suggestions above can be used separately or in combination with each other. In summary, the test administrator should exercise commonsense when modifying tests and testing procedures. Regardless of what changes are made, each change should be carefully considered and carefully documented for future use and reference.

Hearing Impaired - While a visually disabled person has trouble taking tests mainly because he/she cannot see the test materials, the client with a hearing loss or who is deaf has a more basic problem-in a verbal world, he/she is not able to communicate well verbally or in some cases, at all. In discussing what she calls the basic problem of deafness, Levine (1960) wrote:

> Not to hear the voice is not to hear spoken language. Not to hear spoken language means that a preverbal child will remain in complete ignorance of this basic verbal tool for human communication and communion unless extraordinary measures are taken to teach him that there are such things as words, what words are for, how sounds are combined to form spoken words, how words are combined to form connected language, and how verbal language is applied not only to objects, people, activities, and the like but to all aspects of living, feeling, thinking and reasoning (page 28).

The handicap of deafness, especially for those who are deaf from birth or early childhood, results in social isolation as well as communication difficulties. Thus, like the blind child, the deaf child grows up in a set of social conditions that are unique enough to be called a subculture (Mindel and Vernon, 1971).

The above paragraph was not intended to imply that all deaf persons are totally deaf from birth (i.e., profound congenital deafness). Hearing loss is a complex problem and can be discussed both in terms of physical loss and psychological loss. From a developmental point-of-view, a hearing loss becomes a handicap when it prevents normal auditory contact with the environment, especially when it prevents hearing conversation

(Myklebust, 1964, page 25). The two major variables effecting hearing loss in interpersonal communication are: (1) the degree of loss, usually given in decibels, and (2) the age of onset. The range of human speech is between a frequency of 250 and 400 cycles per second, and between 50 and 65 decibels. Based on these numbers, four gradations of hearing loss are defined in terms of decibels:

I. A loss of 30 to 45 decibels - At this level scanning and background functions of hearing are affected, resulting in impaired awareness and emotional detachment. The use of amplification and closeness to the speaker can overcome this degree of loss.

II. A loss of 45 to 65 decibels - The loss of backgroundforeground use of hearing largely eliminates the scanning function of hearing and social relationships are clearly affected. Although the use of amplification makes conversation readily possible, conversation is essentially limited to one person or to a small group because all sound must be given equal attention. The person experiences considerable detachment.

III. A loss of 65 to 80 decibels - At this level both personal, social and general environment contact is difficult and the use of amplifications is less satisfactory than in gradation II. There is a need for considerable reliance on other systems for monitoring, especially on vision and taction. Personal-social relationships are most satisfying when they are with others having deafness.

IV. A loss of 80 to 100 decibels - At this profound hearing loss level, amplification is effective mainly in maintaining intelligible speech and focusing attention to loud environmental sounds. The use of vision and taction is mandatory in maintaining homeostatic equilibrium. Most social relationships are with others having profound deafness (Myklebust, 1964, page 119).

The age of onset is the second factor. All other things being equal, if the degree of loss is from 80 to 100 decibels and is sustained in infancy, the impact on all aspects of behavior can be assumed to be greater than if this degree of hearing loss occurred in adulthood. The age of onset can be divided into six stages:

I. Prenatal to 2 years - This group has the greatest affect in ability to communicate, with implications for impact on personality and emotional adjustment. Isolation is more apparent than in any other group and reliance on vision and taction may be marked.

II. From 2 to 6 years - If a child hears for at least the first two years, he benefits verbally as well as psychologically. After five years there is a noticeable benefit verbally.

III. School years - The language function is well retained for inner language purposes and in other ways. The greatest affect is on personal and social adjustment.

IV. Early adulthood (18 to 30) - Basic personality patterns are not altered, although undesirable traits may be accentuated. Interruption of educational, vocational and marital plans is often severe.

V. Early to late adulthood (30 to 60) - The common problem here is occupational status; complete shift of career often follows the onset of the hearing loss. Change of friends and social group also occur frequently.

VI. Later life - Hearing loss in later life is viewed in terms of increased withdrawal and isolation, increased insecurity and emotional stress. Also they are threatened with mandatory retirement, lack of employment and the need for assistance (Myklebust, 1964, pages 120 - 121).

Experimental support for this list comes from Koplin, et al. (1967). In comparing two groups of deaf students with hearing students on a word association test, it was found that the word associations of the deaf students were comparable to those of younger hearing students. This provides some research evidence for the often noted delayed language development in deaf children. By way of contrast, Sullivan and Vernon (1979) emphasize the fact that "... deaf children are linguistically proficient in the syntax, morphology, and semantics of sign language. This is their 'native' tongue which they naturally acquire" (page 271). With this population, it is better to think of English as a learned second language, and not as the primary language. If this concept is grasped, the difficulties of testing persons with hearing losses sustained at an early age become much more clear.

Some conclusions and general testing guidelines can be drawn from the above discussion. The first is to know the client's life history well enough to obtain an indication of how his/her hearing loss has effected his/her social, educational, occupational and family environment. Before testing, the evaluator must determine the ways the client communicates. Can he/she hear and understand speech in a one-to-one testing situation with or without a hearing aid? Can the client use non-hearing methods of communication? There are three major methods of nonhearing communication for deaf persons. In lip or speech reading, the client obtains the content from careful attention to the speakers lips, facial expressions and throat movements during speaking. There are serious problems with this method. Hardy (1970) observed that lipreading is a difficult task because only 33% of English speech sounds are visible. It is also known that the "best lipreaders only get 25% of what is said and most deaf children get five percent" (Vernon and Kah, 1970 as sited in Sullivan and Vernon, 1979, page 273). Sign language is an ideographic method of communication in which words and ideas are graphically made using standardized gestures of arms, hands and body. In finger spelling, the third method, words or entire sentences are spelled out in "straight" (i.e., literal) language.

Vernon and Brown (1964) stress that the method of communication preferred by the client(s) should be used; this simple rule is perhaps the most important concept when testing all disabled persons, regardless of their handicap. Some clients will use a combination of these methods. The evaluator testing deaf clients must know these methods of communication as proficiently as the evaluator who is assessing Spanishspeaking clients must know Spanish. In conclusion, the first step in testing a deaf client is to have a good indication of how well he/she can communicate with you and you with him/her.

The second conclusion is very obvious--the deaf usually have lower level language skills than hearing persons of comparable age. This effects testing in several ways. Because deaf students score several grades below their hearing counterparts on the standardized achievement tests (Furth, 1973), the evaluator should carefully determine the reading level of tests. Also, persons deaf since early childhood may know the names of physical objects, colors and the meaning of action verbs and some adjectives, but they often have difficulty with prepositions, conjunctions, as well as complex sentence structure. Frequently the critical element of tests are not isolated works or phrases, but analogies, complex verbal reasoning questions, etc. Expressive communication is also effected; persons with hearing loss commonly have problems in writing or in some form of manual or spoken communication.

Third, because hearing disabled persons rely heavily on visual cues, the evaluator must watch his/her own cues. Does the drop of the eyelids and relaxation of facial muscles imply boredom to the client? Could the pointing of a finger indicate a correct response? These visual cues are as important to a deaf person as subtle changes in tone of voice may be to blind persons. However, the sensitivity to visual cues can also help the evaluator who is willing to use gestures and maybe even pantomime to get his/her point across.

The fourth conclusion was mentioned briefly in the opening paragraph of this section. The deaf may be seen as a culturally different group, especially those deaf since an early age. The lack of communication skills, social and often physical isolation in institutions coupled with different educational experiences are just some of the conditions which set the deaf apart. Many adults deafened in later years of life suffer from sensory deprivation. Therefore, tests designed for the general population should be used with the same caution required in testing a culturally different person. The results of some tests, especially personality tests, must be carefully interpreted. For example, some items on the MMPI would unintentionally classify the deaf client as having neurotic tendencies:

A-35 My hearing is apparently as good as that of most people.
E-23 I am likely not to speak to people until they speak to me.
G-30 At times my thoughts have raced ahead faster than I would speak them (Hathaway and McKinley, 1943).

These four conclusions serve as a general framework on which to build some suggestions for test modification for hearing impaired persons:

1. Use of Pre-trials - The section on the use of pretesting orientation techniques and pre-trials (page 22) is also applicable for deaf persons.

2. Low Literate and Nonverbal Test Forms - One way of overcoming the lack of reading skills is to use tests requiring only basic reading achievement. Most tests designed for adults and senior high school students require sixth or eighth grade reading achievement levels. This does not imply that the client who has completed these grades can read at these levels. It means that the client must be able to read on the level achieved by the average sixth or eighth grade student. Boatner (1965) and McClure (1966) tested 93% of the deaf students in the U.S., ages 16 and over, and found that 30% were functionally illiterate, 60% were at a grade level of 5.3 or below and only 5% achieved at a tenth grade or higher level. Wrightstone, Aronow and Moskowity (1963) reported the average reading achievement level of 16 year olds was grade level 3.5

and that 80% were below a grade level of 4.9. These findings and others lead to the strong recommendation that the evaluator test deaf and hard-of-hearing persons on tests requiring low reading levels. There are two ways to meet this recommendation:

First, select tests with low literacy levels. During the past 15 years, and especially in the last eight years, many low reading level tests were developed. Although the motivation behind most of this development was to meet the needs of disadvantaged and culturally deprived groups, these tests can also be used with hearing impaired persons. Some, like the Adult Basic Learning Examination (ABLE, see page 44), are designed to measure reading and arithmetic achievement. Some other tests have special low literate forms. In selecting tests with low literacy levels, the evaluator should carefully review the item content. Some easy-to-read tests are designed for junior high or grade school populations; the item content would be too childish and most likely insulting to an adult.

The second way to solve the low literacy skills problem is to avoid tests with verbal content whenever possible (Vernon and Alles, 1982). Several nonverbal general ability tests and interest inventories are commonly available. In intelligence or general ability tests, assume that since deaf persons are "nonverbal;" test items containing matrices, mazes, visual analogies, etc. can accurately measure ability. One of the nonverbal tests most widely used with deaf persons is the (Raven) Progressive Matrices, described on page 96. (Sullivan and Vernon, 1979; Vernon and Brown, 1964). A much older nonverbal test of general ability is the Revised Beta Examination (see page 98). In locating nonverbal testing materials the evaluator must distinguish between nonverbal and nonreading. Nonreading tests usually require the test administrator to read the verbal sections aloud while the client marks the answer in the test booklet or on an answer sheet. For example, in Test 4, Scale 1 of the Culture Fair Intelligence Test (see page 92), the examiner reads a word for each item aloud and the client responds by placing a mark under the named object. A nonverbal example of testing material involving different scales of the same instrument (Scales 2 and 3 of Test 4, Culture Fair Intelligence Test, page 92) does not require the examiner to read words aloud. After the instructions are read for the subtest, the client visually analyzes the problem and then chooses an answer to complete the pattern.

3. Repeat Instructions to Administrator - As with testing blind persons, the deaf client can be asked to repeat test instructions back to the test examiner; this provides the examiner with feedback on how well the client understood the instructions. Of course, the deaf client may use several methods to communicate with the evaluator - speech, finger spelling, signing, writing or even gestures. The evaluator must be flexible in how he/she obtains this feedback and

on how he/she gives any additional instructions. Any method or methods enhancing accurate communication between client and examiner can be used.

4. Sign Language and Speech-Readers - If the evaluator knows sign language and is testing a group of persons who understand sign language, then the test may be administered by signing the instructions. Prior to actual administration, the test manual must be carefully reviewed for any potential misunderstandings and the instructions signed for practice. Because signing requires more time than regular speech and because the time limits for many tests will have to be lengthened, breaks should be scheduled every hour. If children are being tested, the breaks must be more frequent. During the signing of the instructions, the evaluator should also speak the identical instructions aloud.

   Sullivan (1982) recommends "total communication" when testing; which is defined as simultaneous use of signed English, speech, and gestures. In a study she compared the test scores of children administered the WISC-R under different communication conditions. The results indicated that the children achieved significantly higher scores when the test was administered using total communication.

   Regardless of whether the examiner communicates only with speech or with speech as one part of total communication, the examiner must communicate as clearly as possible. Some general suggestions and cautions for speechreaders are given below; these are taken from Levine (1962, pages 311-312) and Sullivan and Vernon (1979, page 273).

   1. Make certain the mouth and face are clearly visible at all times.
   2. Speak clearly and distinctly; it does not help to make exaggerated lip movements, e.g., no mouthing, shouting.
   3. Watch for signs of lipreading fatigue, such as: restlessness, increase in misinterpretation by the client, fidgeting with a hearing aid, irritability and tired appearance.
   4. Use nontechnical language and simple sentences.
   5. Have a note pad and pencil handy to write key words or expressions.
   6. Maintain eye contact and keep a pleasant face.
   7. Mustaches, beards, gum or other objects in the mouth, and hand movements by the mouth make speechreading difficult, if not impossible.
   8. Make certain that light and glare is not present on either the examiner's face or the client's eyes.
   9. Stay close to the client. The best distance for lipreading is between two and three feet. While this is not possible in a group testing situation, try to keep as close as possible.
   10. Avoid making excessive noise during testing.

Since hearing aids amplify all sounds, the handling of testing materials (especially apparatus tests) should be done quietly. Background noises must also be kept minimal.

5. Use of Interpreters - If the evaluator cannot sign, he/she should have an interpreter translate the instructions into sign language as the evaluator reads them aloud. This procedure was used to successfully administer the GATB (see page 68) to hearing impaired job applicants in several states (Botterbusch and Droege, 1972). If the interpreter is not familiar with the test(s) being administered, have him/her briefed on the general test administration procedures prior to testing. In a group testing situation interpreters are used when testing both hearing impaired and non-hearing impaired persons. In this mixed group, the interpreter should be close to the examinees and be clearly visible to all. "In a group test, the interpreter should stand near the examiner in a well-lit part of the test room. The deaf competitor(s) should be seated near the interpreter with an unobstructed view of the interpreter's hands" (Heaton et al., 1980, page 5).

6. Timing - The usual timing procedures in testing are a verbal command to "Start" and a second command to "Stop." Obviously, these are not appropriate. When starting clients on the test, the evaluator may lower his/her hand or turn the lights off and on. When time is called, he/she may simply turn the room lights off and on.

7. Color Coding - Some paper-and-pencil tests and many apparatus tests can be color coded for greater understanding. For example, the Purdue Pegboard (see page 158), is a finger dexterity test requiring the use of first the right hand and then the left hand to place pins in small holes. Instead of having to explain the difference between right and left, the evaluator could paint each side of the board a different color and refer to the "red side" or the "green side" in the instructions.

8. Demonstration and Practice Exercises - Most test manuals contain a period of administrator demonstration, frequently followed by a client practice session. In demonstrating the proper motions required for dexterity tests, the evaluator should exaggerate the motions involved in turning a peg or picking up a rivet with tweezers. During this exaggerated demonstration, tell the clients that this is a demonstration and that their own motions should be more subtle. If the examiner has access to video taping equipment, it may be useful to show a recording of the correct performance of the task. Video taping may also be used to provide the client with feedback on his/her own performances during practice exercises. During practice exercises the evaluator should carefully watch the clients to make certain that they are following instructions. He/she carefully checks all answers at the end of a practice exercise and then answers

> any questions, provides additional demonstrations or whatever else is necessary to have the client understand the instructions.

Mentally Retarded - Unlike visual and hearing impairments, mental retardation cannot be exactly defined in terms such as 20/200 vision and 80 decibel loss. Although categories and definitions for mental retardation do exist, they often overlap and have vague and confusing guidelines. The problem of definition is complicated because mental retardation is commonly coupled with problems such as poor hearing and vision, speech defects, and cultural deprivation. This is especially true in more severely retarded persons when neurological and other physical problems almost always exist. Thus, a retarded person often has more handicaps than just the fact that he/she learns slowly.

Perhaps the most widely accepted definition of mental retardation today is provided by the American Association on Mental Deficiency (AAMD):

> Mental retardation refers to significantly sub-average general, intellectual function existing concurrently with deficits in adaptive behavior which are manifested during the development period (birth to 18 years). (Grossman, 1977, p. 16)

The two major components of this definition are sub-average intellectual functioning and deficits in adaptive behavior. The AAMD specifies four levels for both intellectual and adaptive behavior: Mild, Moderate, Severe and Profound. (Note that the category of "borderline," defined as a Binet I.Q. of 68 to 83 or a Weschler I.Q. of 78 to 84, is no longer used by AAMD.) These four levels are defined in terms of a range of IQ scores for the intellectual functioning component of the definition. The Stanford-Binet and the Weschler scales are the two most accepted intelligence tests from which to obtain these scores. Two standard deviations below the mean on any standardized intelligence test is the criteria for sub-average intellectual functioning (Matson and Breuning, 1983).

The second component of the definition, adaptive behavior, is not nearly so clear cut. AAMD has qualitatively specified behavior descriptors along several dimensions and categorized these according to the four levels of retardation. No acceptably reliable or valid quantitative adaptive behavior scale has yet been devised (Stolov and Clowers, 1981). Several reasons exist for the difficulties in developing an all-emcompassing adaptive behavior rating scale. The concepts of what behavior is adaptive are relative to many factors: social expectations, what is considered mature, what is considered an off day or an on day versus consistent behavior, etc. To compound the problem the expectations vary considerably from social class to social class, between social and ethnic groups, and between urban and rural populations.

These difficulties underscore the tremendous responsibility placed upon the professional to examine each person independently. The exactness of the IQ score often tempts a professional to make a quick decision as to whether the individual is retarded and if so, at what level. The adaptive behavior segment on the other hand, may be too vague or nebulous for the professional. In this case, the temptation may be to either neglect the mentally retarded person's adaptive behaviors altogether or to fail to consider them within their accurate context, i.e., the individual's unique environment and social network. With the concerns of the classification system in mind, the reader is presented with the IQ ranges and some behavioral descriptions based on the AAMD's scheme:

> I. Mild - (Binet 52 to 68, Wechsler 55 to 69) - This group may engage in semi-skilled or simple skilled jobs. Most take on much responsibility but may require guidance for major tasks. Usually the individual at this level enjoys social or recreational groups but not if the activities are indepth or too complicated.
>
> II. Moderate - (Binet 36 to 51, Wechsler 40 to 54) - At this level, an individual may perform simple routine jobs such as household chores. Interaction with others is generally cooperative. Most activities are self-initiated.
>
> III. Severe - (Binet 20 to 35, Wechsler 25 to 39) - Simple tasks such as the preparation of simple foods, setting table, clearing table, are likely within this group's range of capabilities. The individual at this level may establish friendships and spontaneously participate in group activities. Efforts to be dependable and responsible are often made.
>
> IV. Profound - (Binet 19 and below, Wechsler 24 and below) - This group may participate in simple group activities. They usually have limited vocabulary and frequently communicate with gestures. (Stolov and Clowers, 1981, p. 265)

The trend away from testing and the use of I.Q. scores, and towards training and adaptive behavior has given many mentally retarded clients vocational opportunities they may not otherwise have had. Training programs have proven that the severely mentally retarded person is often capable of learning complex assembly skills and structured service jobs. The emphasis on adaptive behavior has forced professionals to rethink why mentally retarded persons may lose their jobs. The findings consistently suggest that social causes, such as not getting along with co-workers, poor hygiene, and lack of transportation and not the inability to perform job tasks are the main reasons for job loss (Halpern, 1981).

Mental retardation is not a simple concept and all retarded persons are not the same. They may differ in both gross and subtle ways from the general population. This problem of definition is increased by the fact that while there are many known causes for retardation, it is seldom possible to place responsibility on any single factor. A combination of genetic traits and hereditary diseases, prenatal conditions caused by diet, infection, alcohol and/or drugs, birth hazards and finally psychological factors such as type of maternal care, social class, sensory deprivation and cultural background can result in retardation at birth or in early childhood. The vocational evaluator must be able to assess a wide range of persons who are classified under the heading of "mentally retarded" and must be able to deal with each individually.

When testing a retarded person, the evaluator must also realize the problems involved. Although a retarded client may be able to see and hear within the normal range and most likely has the coordination necessary to take a paper-and-pencil test, he/she still may have problems. These are complicated by the fact that because many borderline, mildly and moderately retarded persons differ more in degree than in type from the rest of the population, there may be a tendency not to take special steps in testing this group. However, many widely used tests in vocational evaluation were partly designed for this group. If the test manual gives evidence of successful use with the retarded, the test may not have to be modified.

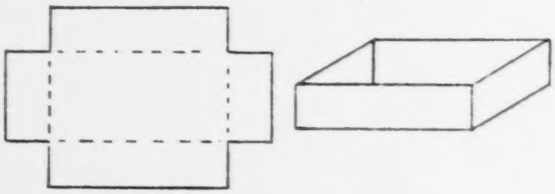
Specific ways of modifying tests for mentally retarded persons are given below:

1. Use of Pre-Trials - The discussion on page 22 about pretesting orientation techniques is relevant here.

2. Simplify Instructions - The instructions for some tests are longer and more complex than necessary. Prior to test use the evaluator must review the test instructions and change any words that are difficult to understand. Complex sentences must be reduced to simple sentences for better understanding. The test booklets should also be carefully reviewed. Some tests use fold-out pages, some use arrows pointing to new parts and others even have the examinee turn the booklet upside down at certain times. Complex testing materials are best avoided. After checking and making any necessary wording changes, the next step is to see if additional instructions, visual aids or demonstrations would result in increased clarity.

   It is difficult to give guidelines for the preparation of additional instructions. The experienced evaluator has noticed that clients frequently question one particular section of the instructions or commonly make the same mistakes when performing either the practice exercises or the test per se. Another indication of not understanding the instructions is frequent mistakes found when scoring, such as having two or more responses blackened in on the answer sheet or random responses. In addition, an incomplete answer sheet could mean the client failed to turn the page in the test booklet. Discussions with clients after the test is given can point out problem areas. Once these problem areas are identified, the evaluator can begin to improve the instructions. These new or changed instructions should be tested prior to actual use and should not result in changes in the time limits.

   Visual aids may be used effectively. A large poster of the demonstration exercises and/or answer sheet will better help the evaluator explain the procedure. If the facility has the resources and the time, they could experiment with the use of overheads and slides to make instructions more understandable. It would be very helpful to use several visual aids to demonstrate how to avoid common mistakes in test taking. One special use of visual aids is in the measurement of spatial perception. These tests require the perceptual ability to visualize what three-dimensional space a flat, two-dimensional form would have if it were folded, usually along dotted lines.



It is sometimes extremely difficult to have a retarded person grasp the concept of visually "folding" the flat shape to produce the three dimensional one. One way of overcoming this is to prepare large cardboard shapes for each of the demonstration items and then to slowly fold each one into three dimensional shapes during the instruction period.

Another way of making instructions easier to understand is to use demonstrations. As with deaf persons, demonstrations and perhaps even video tapes are useful in clarifying the motions needed for the proper manipulation of dexterity test apparatus.

3. Repeat Instructions to Administrator - Although this technique was described in detail on page 23, one additional comment is needed. This technique is a very simple, very realistic way of making certain that all clients understand the instructions. With retarded persons who often cannot remember complex instructions, it is advisable to have them repeat the instructions after each phase and then to summarize the entire set of instructions upon completion. Similar procedures with client demonstrations can be used for dexterity tests.

4. Mark Answers in Test Book - Many persons have problems using separate machine-scored answer sheets. The constant turning of the head or the eyes from the test booklet to the answer sheet makes it easy to lose the place, thus increasing the chances of missing an item. The need to erase completely any wrong answer reduces the amount of time for completing additional items. "Skipping" an item can result in making the entire answer sheet incorrect. In addition, clients with visual defects may have problems rapidly shifting focus from the test booklet to the answer sheet; those with emotional problems or short attention spans could become distracted. In recent years some new tests have been developed and older ones modified to permit the recording of answers directly in the test booklet. If the desired test is available only in a separate answer sheet format, the client can take the test by marking the answers in the test booklet. If tested individually, he/she can respond verbally while the examiner records the answers. If machine scoring is desired, the client responses are transferred to the answer sheet from the test booklet by the evaluator. This recording should be checked by a second person.

5. Low Literate and Nonverbal Test Forms - Because retarded persons do not read at the grade levels required for the successful administration of many tests, the suggestions presented for the hearing impaired are generally appropriate for mentally retarded persons. One more point must be made. For many complex reasons, retarded persons often display social and verbal behaviors more immaturely than their physical age would indicate. This observation has led some persons to consider adolescent and adult retarded persons as overgrown children.

This feeling coupled with the low literacy skills has led to the occasional use of testing materials that are intended for children. To administer a retarded client a reading test containing illustrations of smiling children digging in the sand and questions about Dick, Jane and Sally going to school is demeaning and insulting to the age and interests of the retarded adult. The evaluator should carefully review the item content for each test for adult level material as well as for low level language. One example of adult content in low literacy format is the ABLE.

The second part of this publication was intended to give the test user some general guidelines on testing specific disability groups and how tests can be modified if needed. By way of a summary the reader should realize that testing depends on two-way communication between the examiner and client. Most of the methods given above have as their goal the increased understanding of test instructions and content by the client. Second, prior to testing, the test user should attempt to find a technically adequate test specially designed for the client.

Part 3 - Review of Tests

The third part of this publication contains reviews of tests that are either widely used in vocational evaluation or that have the potential for use in client assessment. The description of each instrument is presented in a standardized format designed to objectively summarize each test. The format and the contents of each category are given below. In using this format the evaluator must remember that only very basic information is presented and that he/she should consult additional sources prior to selecting a test.

Test Review Outline

Title: The full name of the test, as in its manual, and its common name (often initials) are centered at the top of the page.

I. PURPOSE: Why is this instrument administered? The specific traits, aptitudes, abilities, skills, etc. that the test is designed to measure are presented.

II. SUBTESTS: The name of the separate subtests, if any, contained in the test are listed.

III. TEST CHARACTERISTICS:

A. Format: Description of the test booklet and/or answer sheet, the type of responses required by the client and the number of items on each test.

B. Administration: Information on whether the test is: individual or group, self-administered, paper-and-pencil or apparatus, administration time, timed or untimed, and the number of items.

C. Scoring: Information on whether the following is available for each test: machine and/or hand scoring, scoring stencils, overlays, special forms, and the actual or estimated amount of time needed for hand scoring.

D. Norms: Included are a brief description of the norm population(s), and the year(s) that normative data were gathered.

E. Reliability and Validity: The types of reliability data collected, construct, content and/or empirical validity studies for the test, and the standard error of measurement.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: This lists the populations for which, according to the test manual, the test is appropriate. (This category is not to be confused with the "Usefulness of Present Form" category given below. The "Population Served..." category contains information taken from each test's manual; the "Usefulness..." category contains the authors' evaluation of the appropriateness of the test for three specific populations.) Because most of the test manuals specified a specific population, this category reflects the normative data for the test. In some cases if the norms were inadequately detailed, this category may indicate "no special populations."

B. Skills Needed: Included are those skills needed to take the test without modification. The emphasis is on grade reading level, visual acuity and/or pencil usage. (The category contains some of the information used by the authors in preparing the "Usefulness..." category.)

V. USEFULNESS IN PRESENT FORM:

A. Blind:
B. Deaf:
C. Mental Retardation:

How useful is the test without any changes for each of these groups? Can the test be used as is? This section is a general evaluation of the appropriateness of the test for the three disability groups.

VI. POSSIBLE MODIFICATIONS:

A. Blind:
B. Deaf:
C. Mental Retardation:

Using the techniques described in the section, how can each test be modified for the blind, deaf and mentally retarded? Tests that cannot be modified for one or more disability groups are indicated.

VII. SUBJECTIVE COMMENTS: The authors have included what they see as the strong and weak points of the test as well as special warnings. Comments also focus on the relevancy of the test for a variety of handicapped populations.

VIII. ORDERING INFORMATION:

A. Available From: The name of a vendor, not all vendors, is listed. Appendix B contains the addresses of test publishers.

B. Copyright Date: All copyright dates are listed; this enables the potential user to determine if the test is too dated for use.

C. Manual Update: When known the dates of manual revisions, revisions of technical data, or the test per se were indicated. Evaluators should double check this information.

ACHIEVEMENT

ADULT BASIC LEARNING EXAMINATION (ABLE)

LEVEL II (FORMS A & B)

I. PURPOSE: The ABLE is "designed to measure the level of educational achievement among adults." Level I assesses the achievement of adults from first grade to fourth; Level II, fifth to eighth; Level III, ninth to twelfth.

II. SUBTESTS: The three verbal subtests on Level II are: Vocabulary, Reading, and Spelling. The three Level II subtests in math are Computation, Problem Solving, and Total.

III. TEST CHARACTERISTICS:

A. Format: The ABLE is a combination of multiple choice and fill-in-the-blank paper and pencil sub-tests. The client responds directly on the test booklet.

B. Administration: All subtests of this individually or group administered instrument require an average of 150 minutes total. Breaks between sub-tests are optional.

C. Scoring: This instrument may be hand or computer scored. Hand scoring takes approximately 30 minutes.

D. Norms: The ABLE was developed and normed on 1,000 students (grades 2 through 7). The grade equivalent norms were developed on high school students. Supplemental norms included North Carolina prison population, a group of Connecticut Adult Basic Education students, and a group of Norfolk, Virginia Adult Basic Education students. All samples are carefully defined.

E. Reliability and Validity: Split-half reliability studies were conducted on all subtests and levels. The correlation coefficients ranged from .60 to .96. Limited standard errors of measurement data reported. The ABLE was correlated with the Standard Achievement Test and coefficients ranged from .50's to .60's.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Includes mentally retarded, learning disabled, and individuals with less than an eighth grade formal education.

B. Skills Needed: Pencil usage required for writing.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Not useful in present form.

C. Mental Retardation: May be administered in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Because most math problems require the use of paper and pencil to compute, modifications on the arithmetic section would be difficult. Examinees responses to the oral sections could be verbal with examiner writing responses. Answers could be recorded by examinee using a braille typewriter or answer sheet, which would take longer.

B. Deaf: The verbal sections and all instructions could be administered using sign language and/or lip reading. A multiple-choice format for spelling may be more useful than signing, unless the examinee is very fluent in signing and/or lip reading.

C. Mental Retardation: The examiner may ask examinee to repeat instructions to ensure understanding. Additional practice items may also be useful. Individual administration should be considered.

VII. SUBJECTIVE COMMENTS: The ABLE is not designed to diagnose learning problems within a school subject. Clients with short attention span seem easily frustrated. Yet, the ABLE can be used to determine the achievement of adults lacking formal education. The ABLE should be seriously considered for basic literacy assessment.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1967

C. Manual Update: Not applicable

PEABODY INDIVIDUAL ACHIEVEMENT TEST (PIAT)

I. PURPOSE: "The PIAT is designed to provide a wide-range screening measurement of achievement." This is especially useful in determining an individual's scholastic attainment.

II. SUBTESTS: The subtests are: Mathematics, Reading Recognition, Reading Comprehension, Spelling, and General Information.

III. TEST CHARACTERISTICS:

A. Format: All items on the five subtests are presented orally by the examiner from two easel kit booklets. Examinee selects one of four illustrations per page by pointing to or stating the number of the chosen response.

B. Administration: This individually administered, untimed test takes an average of 40 minutes to give.

C. Scoring: The number of correct items between the basal and ceiling limits are hand scored as the test is administered. The results may be converted to grade scores, percentile ranks, age scores, and standard scores and plotted in approximately 15 minutes.

D. Norms: The PIAT was normed on 200 boys or girls in each grade (K-12), a total of 3,000 students. These were selected from different geographical regions. All sample characteristics are clearly described.

E. Reliability and Validity: Test-retest reliability coefficients ranged from .42 to .94. Reliability intercorrelation coefficients ranged from .22 to .89. Standard errors of measurement reported. Content and concurrent validity reported as "good." A validity study correlating the PIAT and the WRAT was favorable overall, but was conducted on a small sample.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual identified the use of this test with general, cerebral palsy, and psychiatric populations.

B. Skills Needed: Client needs reading skills at kindergarten level or above. Because items are read and answer options presented in picture form, the client needs visual and audient skills. No writing required.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not readily useful in present form.

B. Deaf: Not readily useful in present form.

C. Mental Retardation: May be administered in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The PIAT is a highly visual instrument. Only if an individual has partial sight and can perceive the items or pictures adequately would the PIAT be appropriate.

B. Deaf: Modifications would need to include changing the oral presentation of the questions to a signed or written format. The examinee's responses could be written, signed, or pointed to as needed.

C. Mental Retardation: Modifications unnecessary.

VII. SUBJECTIVE COMMENTS: Within each subtest, the material becomes increasingly harder, which is often frustrating for the client. Many have commented negatively on the experience. Although not difficult, evaluators should be familiar with finding basal and ceiling items as this needs to be done during administration. Adult test results are compared with student norm groups which may effect interpretation. Most interpretive information is in conjunction with IQ score, used to figure mental age. Evaluators may or may not have an IQ score on the client. The PIAT is a first-rate verbal test that provides the evaluator with ample opportunity for close observation.

VIII. ORDERING INFORMATION:

A. Available From: American Guidance Service

B. Copyright Date: 1970

C. Manual Update: Not applicable

WIDE RANGE ACHIEVEMENT TEST - REVISED (WRAT-R) - LEVEL 2

I. PURPOSE: Designed "to measure the codes which are needed to learn the basic skills of reading, spelling, and arithmetic."

II. SUBTESTS: Reading, Spelling, and Arithmetic

III. TEST CHARACTERISTICS:

A. Format: The 1984 revision of the WRAT provides the examiner with separate test forms for Level 1 and Level 2. (Level 2 is reviewed here.) This combination oral and written test requires the identification of letters and numbers in the Reading section, pronunciation and spelling of words in the Spelling section, and the computation of math problems from simple addition to square roots in the Arithmetic section. The test and the answer sheet are in a combination form. The Spelling subtest, of course, requires an oral presentation by the examiner.

B. Administration: The Reading subtest must be administered on an individual basis, although the Spelling and Math sections may be administered to a group. Average administration time is 30 minutes. The Math section only is timed.

C. Scoring: For the evaluator who is familiar with the instrument, hand scoring takes ten minutes. Points for each pre-subtest must be added to all three subtests for scoring.

D. Norms: Based on age normed data collection using a stratified national sample. Manual states that data for this representative sample were gathered from approximately 1981-1984. Norm tables were extended to age 74. Samples are thoroughly described.

E. Reliability and Validity: Statistical analysis of the data was based on the Rasch Model and is discussed in detail in The Diagnostic and Technical Manual. The Administration Manual briefly refers to test-retest reliability coefficients for Level 2 at .90 for Reading, .89 for Spelling, and .79 for Arithmetic. Standard error of measurements were reported for all subtests. Content, construct, and concurrent validity studies were favorably reported. Specific correlations for concurrent validity studies were in the .60's, .70's and .80's.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Mentally retarded, deaf, learning disabled, and children through adults.

B. Skills Needed: Ages five through 11 for Level 1 and ages 12 and above for Level 2. Writing skills are needed on Spelling and the written Math subtests.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not readily useful in present form.

B. Deaf: Not readily useful in present form as all instructions are presented orally.

C. Mental Retardation: May be used in present form for this population.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The WRAT may have to be translated to braille depending on the degree of the individual's visual impairment. Other options include increasing the size of the words on the reading test and the size of the numbers on the math test. The written spelling test may need to be modified to allow the examinee to spell the words orally. Time limits will need expanding.

B. Deaf: Instructions for the deaf would need to be written, signed, or lip read. A test for spelling would need to incorporate symbols or pictures instead of finger spelling. Multiple-choice format may be a useful approach to spelling.

C. Mental Retardation: The examiner may ask the examinee to orally repeat instructions back to the examiner in order to maximize understanding. No other modifications needed.

VII. SUBJECTIVE COMMENTS: The WRAT-R is a good prediction instrument to use with individuals considering entering school or getting their GED. Age norms are useful with the "out of school" adult population. The manual cautioned several times against using the grade equivalent as an Arithmetic score. In the 1984 version, the grade equivalents (formerly grade rating levels) were presented in terms of B (beginning), M (middle), and E (end) instead of fractions to further emphasize that the figures cannot be added and subtracted per se.

VIII. ORDERING INFORMATION:

A. Available From: Jastak Associates, Inc.

B. Copyright Date: 1984

C. Manual Update: 1936, 1946, 1965, 1976, 1978, 1984

WOODCOCK READING MASTERY TESTS (WOODCOCK)

FORMS A AND B

I. PURPOSE: This test is administered when precise measures of reading achievement are desired.

II. SUBTESTS: Letter Identification, Word Identification, Word Attack, Word Comprehension, and Passage Comprehension. Subtests are the same for alternate Forms A or B.

III. TEST CHARACTERISTICS:

A. Format: The client must provide a response to all items rather than selecting from alternatives. The client views test items on a type of small easel that is set up between the administrator and the subject.

B. Administration: Directions for administering the test in part and in whole are available in the manual. All five subtests may be administered in 20 to 30 minutes. Basal and ceiling levels must be determined.

C. Scoring: Raw scores may be converted to grade scores, age scores, percentile ranks, and standard scores. In order to interpret all scores, the subject's grade placement must be known to the nearest tenth of the year. Several tables are used in scoring and checking for accuracy is encouraged.

D. Norms: Data were collected in 1971 and 1972 on a stratified random sample of U.S. males and females in grades seven through 12 with social-economic status factors considered.

E. Reliability and Validity: Reliabilities were reported for different grades in the form of split-half, test-retest, alternate form, and standard errors of measurement. Overall the reliability appears high. Validity studies were reported for content validity, a multitrait-multimethod matrix analysis, intercorrelation data, and predictive data. Results on the validity studies vary but overall seem to suggest a valid instrument. Detailed information presented in manual.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: To be used with students from grades K through 12.

B. Skills Needed: Reading level varies. No writing required but client must be able to read and reason in order to correctly answer the items.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Not readily useful in present form.

C. Mental Retardation: Useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Potential modifications include translating all test items to braille and then allowing clients to verbally identify the letters and words to assess their achievement levels on each of the five subtests. This modification, however, would be very time consuming and is not readily advised. Another achievement test would likely be more suitable. The type of items could not be verbally presented without significantly altering the meaning of the test.

B. Deaf: Instructions for this test would need to be signed by administrator or interpreter or lip read by the client. Written instructions would not be appropriate since test's purpose is to assess reading achievement. The manual clearly stated that client's performance should not be penalized by the presence of a speech defect.

C. Mental Retardation: No modifications are necessary in order to administer to mentally retarded clients.

VII. SUBJECTIVE COMMENTS: Although this test is intended for students, a suggested use with rehabilitation clients is when very specific information is needed regarding a client's reading ability. The manual states the Woodcock may be used to determine extent of reading retardation. Total familiarity with the test including the administration, scoring and interpretation is recommended prior to using.

VIII. ORDERING INFORMATION:

A. Available From: American Guidance Service

B. Copyright Date: 1973

C. Manual Update: Not applicable

APTITUDE

ADAPTABILITY TEST

(Forms A and B)

I. PURPOSE: This test was designed "to measure mental adaptability or mental alertness" and is often used to distinguish between those persons who can be placed in a job requiring more learning ability and those who would do better on "simple, routine" jobs.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Each client has a test booklet/answer sheet combination containing 35 items. The item content includes word definitions, analogies, arithmetic computation, and series. Two forms exist, each containing 35 items equivalent in difficulty.

B. Administration: This self-administering, timed test can be given individually or to groups in exactly 15 minutes.

C. Scoring: The score is the number of items correctly answered. Both forms scored by hand with scoring key.

D. Norms: Norms were based on the administration of the test to 14 separate groups--applicants, employees, supervisors, etc. between 1962-65 and were updated in 1970. All the 1970 norm groups are of adequate size; not all sample characteristics are given in the manual.

E. Reliability and Validity: Reliability, determined by alternative form and split-half methods, ranged from .60's to .90's. Criterion related validity studies with various tests ranged from .18 to .88. Predictive validity measures were also reported. Manual recommends test validity be established locally.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: This test is aimed at the industrial market, especially, for applicants or employees limited in "adaptability" to those possessing a high degree. It is not relevant for persons with reading difficulties, nor for those persons who are at very high levels, i.e., top executives.

B. Skills Needed: Pencil usage and an estimated eighth grade reading level are required.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: May be useful if the person has the needed reading skills.

C. Mental Retardation: May have some use with borderline or mildly retarded persons.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test could be read aloud and the examinees could type the answers. Reproduction in a large print format or braille is also possible. Because this is a speeded test, the time limits would have to be lengthened.

B. Deaf: While this test could be administered to deaf persons with reading skills, the heavy emphasis on verbal reasoning raise many doubts about the usefulness of the results with this population. Extra practice items should be added and the time limits lengthened.

C. Mental Retardation: Because the actual items are highly verbal, the only feasible modification for this group would be extra practice items and careful monitoring.

VII. SUBJECTIVE COMMENTS: The norm data are relatively recent and complete, and the Thurstone Mental Ability Test was compared to this test for item similarity. There is a question in the minds of the reviewers as to what the test really measures. Although the test is supposed to measure "adaptability," the item format and content are definitely those of a general intelligence test. While it is assumed that adaptability is related to general intelligence, there is no evidence

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates

B. Copyright Date: 1943, 1954, 1967

C. Manual Update: 1943, 1954, 1967

BENNETT MECHANICAL COMPREHENSION TEST (BMCT - BENNETT)

FORMS S AND T

I. PURPOSE: "Measures ability to perceive and understand the relationship of physical forces and mechanical elements in practical situations." BMCT assesses spatial perception and tool knowledge. The BMCT is not related to manual dexterity.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Each client works from a test booklet containing illustrations with a written question and three choices for each answer. A separate answer sheet is provided. For those individuals whose reading level is too low, a tape of the questions is available. The items deal with gears, hydraulics, pulley systems, structures, levels, center of gravity, etc.

B. Administration: Group or individually administered with a time limit of 30 minutes. This is essentially a power test.

C. Scoring: BMCT takes approximately 15 minutes to hand score.

D. Norms: The 1966 normative data were collected on industrial applicants, employees, and students. Sample size varies between 85 and 906, with most groups having about 100 subjects. Groups are described in sufficient detail.

E. Reliability and Validity: Reliability coefficients for industrial and educational groups range from .81 and .93. Validity coefficients for job performance criterion related studies were for the most part significant at .05 level. Several types of occupations were reviewed. The manual presents numerous studies showing correlations between the Bennett and criteria such as course grades, job ratings and training courses.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: No specific populations were mentioned.

B. Skills Needed: The manual stated reading difficulty level fell within "fairly easy" range, similar to level of popular magazines. It is assumed this means between sixth and eighth grade. Client needs to be able to use pencil to fill in circles on answer sheet.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: May be useful in present form.

C. Mental Retardation: May be cautiously used with MR individuals whose reading levels are high enough to comprehend material. However, the taped questions, test booklet, and separate answer sheet may create confusion for the client.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test questions are based on the pictures in the test booklet. These pictures are fairly small and detailed. Enlarging the pictures may be worthwhile for those who are partially sighted. This test is not feasible for the totally blind.

B. Deaf: The test questions are written in the test booklet and so for the deaf reader there would be no problem. The deaf nonreader will need to have the questions and instructions signed and/or spoken so that lips can be read.

C. Mental Retardation: Limited modifications for the MR individual who has an adequate reading level include simplification of instructions, repeating instructions back to administrator, allowing answers to be marked in test booklet, and administering extra practice items.

VII. SUBJECTIVE COMMENTS: This test has a long history of use in selection and placement. Because the illustrations are very detailed, the client's vision acuity should be good. Client taking test will need to have "true" mechanical ability in addition to spatial aptitude; too often mechanical tests are more spatial. An update of pictures would make test even more realistic.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1969

C. Manual Update: 1980

CAREER ABILITY PLACEMENT SURVEY (CAPS)

I. PURPOSE: To provide "a brief measure of multi-abilities related to entry requirements in occupations and careers."

II. SUBTESTS: Mechanical Reasoning (MR), Spatial Relations (SR), Verbal Reasoning (VR), Numerical Ability (NA), Language Usage (LU), Word Knowledge (WK), Perceptual Speed and Accuracy (PSA), and Manual Speed and Dexterity (MSD).

III. TEST CHARACTERISTICS:

A. Format: Each subtest is printed on a separate form with instructions on one side and test items on the reverse. The client marks responses directly on the test form; all tests are multiple choice. There is both a self-scoring form and a machine-scoring form.

B. Administration: This individual or group administered test can be completed in approximately 50 minutes; cassette recorded instructions are available. The actual time for each test is five minutes.

C. Scoring: The self-scoring form can be scored and converted to stanines on a profile sheet in approximately 30 minutes, but may take longer for some clients. The machine-scoring forms must be mailed to be computer scored and are returned after they are processed. There is one score for each subtest.

D. Norms: Original norms were based on a national sampling of intermediate, high school, and community college students. Norm data collected in 1979 and 1981 do not indicate significant changes and are expressed in stanine form. Although normative groups are certainly large enough, many characteristics of these samples were not described. Occupational norms were briefly mentioned but not found.

E. Reliability and Validity: Split-half, test-retest, and alternate forms reliability coefficients ranged from .60's to .90's--considered a good to high reliability. Standard errors of measurement are also reported. In addition to internal validity techniques reported, CAPS was externally correlated with several aptitudes (including GATB) and achievement tests with validity coefficients ranging from the upper .40's to the .80's. Predictive validity discussed in manual.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Intermediate, high school, and community college students.

B. Skills Needed: Pencil usage, eighth grade reading level or above.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: May be useful in present form.

C. Mental Retardation: May be useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Because of their visual content, the Mechanical Reasoning and Spatial Relations subtests could not be modified. The Perceptual Speed and Accuracy and the Manual Speed and Dexterity subtests require visual acuity. It would be very difficult to modify these four subtests; therefore, we do recommend modification of this for visually disabled persons.

B. Deaf: With additional examples and careful monitoring, the CAPS could be used with this population. Because the tests all appear to be speeded, the evaluator should experiment with a longer time limit.

C. Mental Retardation: Higher level mentally retarded persons may be able to take this test with minimum modification. Careful monitoring, additional examples, cutouts of the Spatial Relations subtest, and having the client(s) repeat the instructions back to the examiner might prove useful.

VII. SUBJECTIVE COMMENTS: Career information is based on both the outdated 1965 edition DOT and the current 1977 (fourth) edition. The CAPS may be a good alternative to the longer aptitude tests for average or below average individuals with about an eighth grade reading level. Its use as a screening battery is suggested. In general the CAPS appears to be a carefully developed test battery for use with teens and young adults.

VIII. ORDERING INFORMATION:

A. Available From: EDITS, Inc.

B. Copyright Date: 1981

C. Manual Update: None

COMPUTER OPERATOR APTITUDE BATTERY (COAB)

I. PURPOSE: The COAB designed to "predict job performance of computer operators and to identify those applicants with potential to succeed in operator jobs."

II. SUBTESTS: Sequence Recognition, Format Checking, and Logical Thinking.

III. TEST CHARACTERISTICS:

A. Format: Each client has a test booklet with instructions, practice exercises, test questions, and a separate answer sheet. Client must keep carboned answer sheet lined up with test booklet for marking with pencil. Erasures not allowed but a method of correction is discussed in manual.

B. Administration: About 60 minutes of administrative time is required; the test can be given to groups or individuals.

C. Scoring: Approximately 15 minutes to hand score.

D. Norms: Data were collected from a sample of experienced and inexperienced operators. Although not all demographic characteristics were considered equally, data were still being gathered as of 1973.

E. Reliability and Validity: Alternate form for two of the subtests and test-retest reliability presented correlation coefficients ranging from .75 to .95. These studies included some experimental test items that were eventually eliminated. Manual suggested reliability may be higher on final form but no data were available. Validity studies were compared to actual performance and estimated potential on the experimental form. Criterion related additional studies were discussed in detail. Overall, the validity coefficients appeared low.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: No special population mentioned.

B. Skills Needed: Ability to read at sixth grade level or above. Pencil usage required to mark answers with an "X".

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Most of the instructions are read aloud as the client follows in his or her own test booklet. For those deaf clients that can read, the instrument would be fairly useful.

C. Mental Retardation: The COAB is not readily useful because of the high level of vocabulary and the advanced concepts.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Most items are visually presented but could probably be translated to braille. The Logical Thinking Format section of the COAB is based on visual flow charts and would likely be difficult to adapt. Overall, the COAB would be difficult to modify for the blind population.

B. Deaf: Introductory remarks and a few preliminary instructions found only in the Examiner's Manual could be provided to the client in written form. The more detailed and lengthy instructions are provided in the Examiner's booklet along with examples. If client could not read, then signing the exact instructions would likely be tedious and not very practical. Simplification of instructions for signing purposes may minimize fatigue but client would still need to have reading skills for reading the problems and performing actual computer operator jobs.

C. Mental Retardation: Even with modifications, the COAB is not likely appropriate for mentally retarded individuals due to its abstract nature and high level of complexity.

VII. SUBJECTIVE COMMENTS: It is often more helpful to examine results of each individual subtest to determine strengths and weaknesses rather than just total test score. The COAB appeared to be related to some clerical tasks and clients' problem solving skills. The test is one method to introduce clients to computer operator skills.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1974

C. Manual Update: Not applicable

COMPUTER PROGRAMMER APTITUDE BATTERY (CPAB)

I. PURPOSE: The CPAB was developed to "aid managers of data processing centers and personnel directors in selecting persons with the aptitudes for these positions."

II. SUBTESTS: Verbal Meaning, Reasoning, Letter Series, Number Ability, and Diagramming.

III. TEST CHARACTERISTICS:

A. Format: Each client has a test booklet with instructions, practice exercises, test questions, and a separate answer sheet. Client must keep carboned answer sheet lined up with test booklet for marking with pencil.

B. Administration: This group of individually administered test requires approximately 80 minutes to complete.

C. Scoring: Requires approximately 20 minutes to hand score.

D. Norms: Norms are based on 940 experienced applicants and trainees. Norm groups were characterized by sex, race, age, educational background, and applicant status. Norm data during the early 1970's were submitted to publisher by companies administering CPAB to applicants. A wide range of employers was noted.

E. Reliability and Validity: The reliability estimate for the total battery score is .95. The range across all subtests was .67 to .95. Criterion validity studies were based primarily on success in training and job performance ratings. Predictive validity results for training outcome appeared more favorable than job performance criteria.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: In addition to computer programmer trainees, the manual refers to minority studies.

B. Skills Needed: Ability to read at sixth grade level or above. Pencil usage required to indicate answers.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not readily useful.

B. Deaf: Usable with slight modifications.

C. Mental Retardation: Not readily usable.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Very visually oriented. The diagramming section would be especially difficult to modify for use with the blind.

B. Deaf: Same as COAB (page 61).

C. Mental Retardation: Use with this population is not very feasible; see COAB.

VII. SUBJECTIVE COMMENTS: Most clients tested have had little exposure to computers; therefore, the COAB is used more often. The CPAB is also a bit lengthy.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1967, 1974

C. Manual Update: 1974 manual stated timely updates would be available

DIFFERENTIAL APTITUDE TEST (DAT)

I. PURPOSE: "To provide an integrated, scientific, and well-standardized procedure for measuring the abilities of boys and girls in grades eight to 12 for purposes of educational and vocational guidance."

II. SUBTESTS: Eight subtests which include Verbal Reasoning, Numerical Ability, Abstract Reasoning, Clerical Speed and Accuracy, Mechanical Reasoning, Space Relations, Spelling, and Language Usage.

III. TEST CHARACTERISTICS:

A. Format: All items are five alternative multiple choice except for the spelling subtest. Several forms of the test exist and all have a separate answer sheet.

B. Administration: The DAT is a group administered paper and pencil test with a total administration time of approximately four hours. Administration may be divided into sessions. Circumstances for partial administration are listed in the manual.

C. Scoring: Forms are available for hand or machine scoring. The hand scored forms require stencils and take about 20 minutes to score.

D. Norms: Data were collected in 1972 in a random sample of 63,000 public school population in grades eight to 12 in the U.S. Separate grade and sex norms are given.

E. Reliability and Validity: Split-half or test-retest reliability coefficients, depending on the particular subtest, are reported. Coefficients average in the low .90 range. This is one indication of the careful construction of the battery. The DAT has been thoroughly and successfully validated against a variety of secondary school grades, achievement tests and aptitude tests. The evidence given with these criteria is impressive. However, one problem with DAT validation is a lack of studies using job or training success as the criterion. The test is useful in predicting academic outcomes and, in spite of a lack of job related studies, it is one of the best researched batteries available.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Youth in junior and senior high school, adults.

B. Skills Needed: Sixth grade reading level, use of pencil.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not readily useful in present form.

B. Deaf: Although the DAT may be used with deaf persons with fairly high verbal and reading skills, it's use is not recommended with this population.

C. Mental Retardation: Use depends on level of retardation.

VI. POSSIBLE MODIFICATIONS:

A. Blind: While it is possible to translate the verbal and mathematical sections into braille or in large print, the Abstract Reasoning, Mechanical Reasoning and Space Relations contain significant visual perception. It would not be practical to modify these sections.

B. Deaf: The instructions could be signed or written. The examinee could repeat these instructions to the examiner to ensure understanding. Additional practice items should also be considered.

C. Mental Retardation: The use of this test with mentally retarded is dependent on the level of retardation. Additional practice exercises, more breaks, pretesting orientation and careful monitoring would be necessary for mentally retarded persons functioning at a higher level. We do not suggest its use with lower level persons.

VII. SUBJECTIVE COMMENTS: The DAT is an excellently constructed and thoroughly researched battery. It would be especially useful in providing a general measure of several aptitudes in planning education and training. While it is impossible not to recommend it on its technical qualifications, it may have limitations in vocational assessment: (1) length, (2) reading skills required, (3) use of separate answer sheets, and (4) the abstract nature of some of the tests.

Instructions for test administration are both in the manual and the test booklet. The administrator must coordinate both items when reading the instructions; this makes it much more difficult for the administration of the test.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1947, 1973, 1974

C. Manual Update: 1952, 1959, 1966, 1973

FLANAGAN APTITUDE CLASSIFICATION TEST (FACT)

I. PURPOSE: "To yield a series of composite occupational scores, providing a broad basis for predicting success in various occupational fields." The manual states that the tests are usable in vocational guidance counseling and for employee selection.

II. SUBTESTS: Sixteen subtests exist: Inspection, Coding, Memory, Precision, Assembly, Scales, Coordination, Judgement and Comprehension, Arithmetic, Patterns, Components, Tables, Mechanics, Expression, Reasoning and Ingenuity.

III. TEST CHARACTERISTICS:

A. Format: Each subtest is printed separately and consists of a combination carbon answer sheet and test booklet. Most of the subtests use a multiple choice format. The three performance tests, Precision, Coordination, and Patterns, do not require special equipment.

B. Administration: Total battery requires two half-day sessions of about one and a half hours each. Each subtest has separate time limits except for the Judgement and Comprehension, and the Expression subtests which are both untimed. Time limits range from one to twenty minutes, with most tests being in the five to ten minute range.

C. Scoring: Each subtest is scored by counting the correct answers inside the carbon answer sheet and recording them on an answer grid. Scoring instructions for each subtest are in the manual. Scores are converted to an Aptitude Classification Sheet and interpreted in stanines.

D. Norms: No information is contained in the Examiner's Manual. Detailed information was located in the 1958 Technical Report Manual and was based on the original 19 tests. Norm group basically consists of ninth through 12th grade students in the Pittsburgh, Pennsylvania public school system originally gathered in 1947 and updated in 1952.

E. Reliability and Validity: No information is contained in the Examiner's Manual. Due to the number of subtests involved, various reliability formulas were used including Spearman-Brown, split-half, and alternate forms. The median coefficient was reported to be .75. Several validity studies were reported. The mean validity coefficient was .20. Detailed and confusing predictive and concurrent validity studies were also reported.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Students or prospective employees.

B. Skills Needed: Visual acuity and pencil usage are needed. The reading level was not identified and seems to vary between subtests.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: The non-verbal tests may be useful without modification.

C. Mental Retardation: Not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind:

B. Deaf:

C. Mental Retardation:

Because the FACT consists of several separate subtests, each one of which is unique, it is not practical to modify the FACT for any handicapped group.

VII. SUBJECTIVE COMMENTS: Unless otherwise stated, all information is from the Examiner's Manual. The numerous subtests of the Flanagan make it difficult to critique. One of the biggest drawbacks is its age. Although the Examiner's Manual was stated as being revised in 1978, no test information more recent than 1960 was found. The subtests are grouped according to various occupations for which they supposedly predict success. The statistical information is not clear. Information on FACT is reported in eight different manuals which adds to the confusion. Each test seems to be unique and as such may aid an evaluator with recommendation decisions. We do not recommend the use of this test battery; if a multiple aptitude test battery is needed, use the DAT (page 61) or GATB (page 65).

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1953

C. Manual Update: Appears to be a 1978 Examiner's Manual revision although data is reported as being from the 1950's.

GENERAL APTITUDE TEST BATTERY (GATB)

B-1002, Forms A and B

I. PURPOSE: The GATB assesses "vocationally significant aptitudes" that are useful in vocational counseling, training selection, job selection, and job placement. The GATB measures nine aptitudes: General Learning Ability, Verbal, Numerical, Spatial, Form Perception, Clerical Perception, Motor Coordination, Finger Dexterity and Manual Dexterity.

II. SUBTESTS: There are 12 subtests: Name Comparison, Computation, Three-Dimension Space, Vocabulary, Tool Matching, Arithmetic Reasoning, Form Matching, Mark Making, Place, Turn, Assemble, and Disassemble.

III. TEST CHARACTERISTICS:

A. Format: Seven of the tests are printed in two booklets, one on a single sheet, two require a pegboard, and two require washers and rivets. The paper-and-pencil tests are multiple choice.

B. Administration: The group administered instrument takes about two and a half hours. The instructions are very formal and standardized. The emphasis is on tightly controlled testing procedures.

C. Scoring: Scoring may be done by hand or machine. Hand scoring takes about 20 minutes. Using an Individual Aptitude Profile Card, scores are converted and some are combined to obtain the nine aptitudes. In an attempt to compensate for possible misinterpretation, one standard error of measurement is added to each aptitude score. Aptitude scores are compared to requirements for specific jobs (Specific Aptitude Test Batteries -SATB) or a group of jobs having the same aptitudes (Occupational Aptitude Patterns or OAP's). This comparison can be done either by hand or machine.

D. Norms: The original GATB norms were developed in 1950 from a general working population sample of 4,000 workers. Norms were also developed from a maturation study of ninth and tenth graders from 1958 to 1968.

E. Reliability and Validity: The development section of the manual contains a chapter on reliability. Subtest reliability coefficients for the pencil-and-paper tests were very high. The apparatus tests yielded moderately high reliabilities. The strong point of the GATB is its validity. The battery is validated on over 500 jobs. Extensive data relating the GATB to training success, educational attainment, and other tests are available. The Employment Service's program of test validation has made the GATB the most validated aptitude test available.

IV. SELECTION CRITERIA:

A. Populations: The GATB is intended for Employment Service applicants, and has been successfully used with many populations: high school students, manpower training program trainees, hearing impaired, and prisoners. A Spanish language version (BGPA) is also available.

B. Skills Needed: A sixth grade reading level, ability to stand, use of upper extremities, and pencil use are necessary to take all subtests. The ability to stand has been modified somewhat to allow persons in wheelchairs to take the test.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: May be used if instructions (and test items) are signed and written.

C. Mental Retardation: May be administered to all persons with a sixth grade reading level.

VI. POSSIBLE MODIFICATIONS:

A. Blind: It is not practical to modify the GATB for this population.

B. Deaf: An interpretor may administer the battery using sign language. Instructions may be written on cards and held while the administrator reads them. Pretesting orientation material is available from the Employment Service.

C. Mental Retardation: Pretesting orientation materials will familiarize examinees with the item and test format. The Wide Range Scale, another Employment Service test, may be administered prior to the GATB to determine appropriate reading levels.

VII. SUBJECTIVE COMMENTS: Although the GATB is widely used, probably the most useful single test in vocational assessment, and a technically superior battery, it has two problems: (1) much of the validation research has been done on semiskilled jobs and not on skilled or technical occupations and (2) the multiple-hurdle method of validation developed prior to computer technology should be replaced by multiple regression procedures. The major advantages are: (1) the relationship of the GATB to jobs and training, and (2) the relationship between the aptitude scores and job analysis results. Use of the GATB is controlled by the State Employment Services. Each user must be "certified" and all materials are ordered only after approval. While this does to some degree insure proper use of the GATB, these procedures often prevent common usage by non-profit agencies. The Employment Service is moving towards a new "Job Family" concept. The SATB's and OAP's will reportedly be replaced within the next year.

VIII. ORDERING INFORMATION:

A. Available From: State Employment Services must give prior approval and training; materials from the Government Printing Office.

B. Copyright Date: Not copyrighted, but under control.

C. Manual Update: 1982.

MINNESOTA CLERICAL TEST (MINN. CLERICAL)

I. PURPOSE: Designed to measure clerical speed and accuracy.

II. SUBTESTS: Number Comparison and Name Comparison.

III. TEST CHARACTERISTICS:

A. Format: The client compares two items and makes a checkmark if they are identical within a "very strict" time limit.

B. Administration: Average of 20 minutes for both tests including instructions. Individually or group administered test.

C. Scoring: A "guessing" formula is applied to compute the raw score. Requires approximately ten minutes to hand score.

D. Norms: Norm tables were provided in manual with data from 1959, 1974, 1975, and 1976. Data were available on applicants and employees with race and sex varied. Data from several different businesses and grade levels of eighth to 12th were available.

E. Reliability and Validity: Test-retest coefficients were over .80 for Numbers, and over .85 for Names. Standard errors of measurement were reported for each subtest. Validity studies examined correlation between the Minnesota Clerical Test scores and job training performance, and other tests. Significant levels were not reached for all coefficients reported. See manual for more details.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: "Special" populations not specified.

B. Skills Needed: Client needs to use pencil to make checkmarks.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Not useful in present form.

C. Mental Retardation: Useful if examinee understands instructions.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test could be translated to braille but unless examinee plans to perform clerical work in braille in the future, this test is not useful for the blind. The partially sighted would require significant enlargement of items.

B. Deaf: The instructions could be signed or written. The examinee could repeat the instructions to the examiner to ensure understanding. A light flash could be used for the timed section.

C. Mental Retardation: No modifications necessary if client understands instructions. Asking client to repeat a simplified version of the instructions is useful.

VII. SUBJECTIVE COMMENTS: The guessing formula employed to score this test is not widely accepted today. Does not seem to have good face validity for a clerical test.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1959, 1979

C. Manual Update: Not applicable.

OFFICE SKILLS TEST

I. PURPOSE: "To assess the clerical ability of entry-level job applicants."

II. SUBTESTS: Twelve subtests: Checking, Coding, Filing, Form Completion, Grammar, Numerical, Oral Directions, Punctuation, Reading Comprehension, Spelling, Typing, and Vocabulary.

III. TEST CHARACTERISTICS:

A. Format: Each subtest has a separate combination answer sheet/test booklet which is contained in a hardback notebook. The format varies for each subtest. The Oral Directions test involves the use of a cassette; Typing Test requires a typewriter.

B. Administration: Typically used with groups and may be timed or untimed. Actual timing for the total battery is 65 minutes or approximately one and one half hours including time required to read instructions and complete examples.

C. Scoring: All subtests are scored with stencil overlays except for typing test, which is scored by counting errors and applying presented formula. Scoring requires approximately ten minutes per test including conversion to percentiles.

D. Norms: Sources for norm groups are not found in the administrative manual, but in the technical manual. The norm group consisted of more than 1,000 California participants in clerical and secretarial positions equally represented by sex. Separate norms provided for majority and minority groups.

E. Reliability and Validity: (Information in Technical Manual). Internal reliability coefficients ranged from a low of .56 on Oral Directions to a high of .96 on Filing. Content of test stated to be "highly valid." Criterion-related validity based on independent rating of employees and subsequent scores on the Office Skills Test were reported in seven different tables and described as "statistically significant" for the most part.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Special populations not identified in manual.

B. Skills Needed: Not identified in manual; reading level varied with each subtest; vision, hearing, pencil usage, finger dexterity (typing) needed for various subtests.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Not useful in present form.

C. Mental Retardation: Not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind:

B. Deaf:

C. Mental Retardation:

Because of the age and lack of technical information we do not believe that any modifications would be worth the effort.

VII. SUBJECTIVE COMMENTS: Statistical information was not clearly presented. Timed version only had specific occupational norms. The various subtests appeared applicable to certain tasks in other jobs and certain areas in school achievement. The typing test is appreciated as surprisingly few clerical tests include typing.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates - Business Program Division

B. Copyright Date: 1977

C. Manual Update: Not applicable

PERSONNEL TESTS FOR INDUSTRY - ORAL DIRECTIONS TEST (PTI-ODT)

(Forms S and T)

I. PURPOSE: A "recorded, wide-range test of general mental ability which also provides a direct measurement of individual's ability to understand oral directions." Developed for selection and classification in identifying the more able individuals in groups of low educational levels.

II. SUBTESTS: Not applicable. (Forms S and T are equivalent)

III. TEST CHARACTERISTICS:

A. Format: A standardized recorded oral presentation. A written script of the test is available to the evaluator. Client must print letters and numbers on a separate answer sheet based on increasingly complex directions.

B. Administration: Timing is controlled because of tape recording; approximately 20 minutes. May be given to group or individual.

C. Scoring: Answer key is used to score items and give credit points. Deviations in scoring are listed on key. Scoring averages 15 minutes.

D. Norms: Norm tables from the 1970's and 1954 were in manual. Normative samples included race, sex, and several different types of occupations, applicants, employees, rehabilitation centers, and workshops.

E. Reliability and Validity: Split-half and test-retest reliability studies were performed. The overall range for both studies was from .73 to .93. Criterion-related studies of the PTI-ODT correlated from .60 to .80 within "general mental ability" tests. Correlations within job performance ratings varied tremendously for different groups as reported in the manual.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Bilingual with English as a second language, vocational trainees and industrial personnel are mentioned in the manual.

B. Skills Needed: "Ranges from basic literacy (ability to print alphabet and knowledge of simple numbers) to somewhat above junior high school level." Required to write words for only one item.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Not useful in present form.

C. Mental Retardation: Technically may be administered in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Items on the answer sheet could be significantly enlarged for the partially sighted or translated to braille for the individual without sight. However, because the test directions instruct the examinee to place numbers or letters in or beside specific items, an overall view of the test sheet is needed. Modifications for the totally blind are not feasible.

B. Deaf: Modifications could include the administrator signing the items. Any alterations of time limits would need to be recorded. Because written instructions would alter the purpose of the test, modifications for this group are not advised.

C. Mental Retardation: The questions are read at a rather rapid rate which may cause confusion. Modifications could include the administrator reading orally from a written script. Any alterations of time limits would need to be recorded. No modifications are really needed for the borderline mentally retarded client.

VII. SUBJECTIVE COMMENTS: Individuals with limited use or limited knowledge of numbers and alphabet would probably be penalized, especially since a set amount of time is allowed for each item. The voice on the recording is fast at times and sounds like a northern white male, which may make it difficult for clients in other geographical regions to follow. May give some indication of client's ability to follow oral directions in a school setting. Norm groups do not always seem to match client population.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1946, 1954, 1974

C. Manual Update: 1974

REVISED MINNESOTA PAPER FORM BOARD TEST (PAPER FORM BOARD)

(Series AA, BB, MA and MB)

I. PURPOSE: The form board has two major purposes: (1) the original purpose was in selection and placement in jobs requiring a "mechanical orientation" and (2) the test also measures "spatial imagery," which correlates with general intelligence, thus, providing a nonverbal estimate of intellectual functioning.

II. SUBTEST: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The items are "64 two-dimensional diagrams cut into separate parts. For each diagram there are five figures with lines indicating the different shapes out of which they are made." The examinee chooses one figure "composed of the exact parts that are shown in the original diagram." This is a speed test.

B. Administration: The Form Board is a group, administered paper-and--pencil test. Administration time is 20 minutes. For Series AA and BB, the examinee records his/her answer on the test itself; Series MA and MB require a separate answer sheet.

C. Scoring: All four forms can be hand scored in about 20 minutes. Forms MA and MB can be machine scored.

D. Norms: The device gives educational (grades 10 through 12) and industrial norms (applicants, employed workers, and military) for each series. The samples were carefully described and the groups large enough to provide meaningful standards of comparison.

E. Reliability and Validity: Alternate form reliability correlations range from .71 to .78; test-retest from .79 to .90. Both types of reliability are quite high. Validation studies included differentiating between groups with different levels of expertise, other tests, educational and vocational predictions, and factor analytic studies. As presented in the manual, the instrument appears to be a valid tool.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Non-English speakers.

B. Skills Needed: Although reading is not required, the examinee needs good visual acuity and use of a pencil.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Except for the limited instructions read by the examiner, this instrument is useful in present forms.

C. Mental Retardation: The abstract nature of spatial perception limits its usefulness with this population. It may be useful with borderline mentally retarded persons.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The "capacity to visualize" is identified in the manual as part of the purpose of the test. The Paper Form Board is not modifiable for the blind and visually disabled persons.

B. Deaf: Instructions would need to be read by the client or signed by an interpretor. The instructions are straight forward enough that a nonreading deaf person may be able to understand them by gestures from a nonsigning administrator. Additional practice exercises would be useful.

C. Mental Retardation: If the examinee understands the instructions and practice exercises then he/she may be able to take the test. The instrument is fairly abstract. Administering additional practice exercises may help in determining the client's level of understanding prior to giving the test.

VII. SUBJECTIVE COMMENTS: This spatial aptitude test is similar to the GATB spatial subtest. The illustrations are small and detailed, and 384 illustrations must be viewed. The test may also suggest something about the client's ability to concentrate. This technically adequate test has a long history of successful research and practical use.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1970

C. Manual Update: 1920's, 1934, 1948, 1970

SHORT EMPLOYMENT TESTS (SET)

I. PURPOSE: To "measure present skills and competencies of an individual--his ability to recognize the synonyms of frequently used words, perform simple numerical operations, and locate proper names in an alphabetical list and code the amount associated with each name."

II. SUBTESTS: Verbal (V), Numerical (N), and Clerical (CA) aptitudes.

III. TEST CHARACTERISTICS:

A. Format: Clients must compare two words for similarity and write the number of the correct answer for Verbal, must compute and write the correct number for Math and must compare name spelling and assign code to numerical amounts in Clerical.

B. Administration: Average time to administer is 15 minutes to either groups or individuals.

C. Scoring: This hand-scored instrument takes about ten minutes to score. Keys are provided which facilitate scoring.

D. Norms: 1956, 1972, and 1978. Data are reported on trainees and applicants of several business organizations--mainly teller and clerical jobs. In most cases, sex, race, and geographic area are reported.

E. Reliability and Validity: Alternate form reliability coefficients for each subtest were greater than .80. Criterion-related validity studies were performed on all three subtests. Validity coefficients were highest for clerical. Standard deviations reported.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Applicants for clerical jobs.

B. Skills Needed: Clients must be able to read and have some knowledge of math functions--addition, subtraction, multiplication, and division. Specific achievement levels required to take the test are not specified. Tests require use of pencil.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Slight modifications needed.

C. Mental Retardation: Useful depending on individual level of mental retardation.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Answer sheet could be enlarged for the partially sighted or translated to braille. Additional time would be needed. Vocationally, however, these same modifications would need to be available on the job.

B. Deaf: The written instructions could be read silently by the examinee and then repeated and/or signed back to the instructor or interpretor. A light flash could serve as a "times-up" indicator.

C. Mental Retardation: Modifications which may facilitate examinee's understanding of test instructions include extra practice items and examinee repeating instructions to examiner.

VII. SUBJECTIVE COMMENTS: Very quick assessment tool. The last 30 questions on the numerical subtest are on the back of the test and are often overlooked by clients. Examiner is cautioned against assuming the clerical subtest measures all aspects of clerical work.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1972, 1978

C. Manual Update: 1956, 1972, 1978. Manual supplements included in the back of 1972 revised manual.

SHORT TESTS OF CLERICAL ABILITY (STCA)

I. PURPOSE: To measure "aptitudes and abilities important to the successful performance of tasks that are common to various office jobs."

II. SUBTESTS: Administered as needed: Arithmetic, Business Vocabulary, Checking, Coding, Directions--Oral and Written, Filing, and Language.

III. TEST CHARACTERISTICS:

A. Format: Although all subtests are multiple choice, the format varies for each subtest. All subtests are one page with instructions and/or examples on one side and items plus answer space on reverse side.

B. Administration: Typically administered to groups (although not required) in 50 to 60 minutes for total battery. Each subtest has separate time limits, which range from three to six minutes.

C. Scoring: Transparent overlay stencils with written instructions are used for scoring. Raw scores converted to percentiles for interpretation.

D. Norms: The test has normative data on the following groups: applicants, employed minority workers, employed majority workers, secretarial, specialized clerks (no specific occupations listed), and general clerk, typist and office-machine operators. Most sample sizes are adequate in size.

E. Reliability and Validity: Various techniques for estimating reliability were used according to the subtest examined, e.g., split-half, alternate form, and test-retest. Reliability coefficients ranged from upper .40's to low .90's with standard errors of measurement reported. The manual contains an impressive list of validity studies with a variety of clerical employees; the most common criteria was supervisors' ratings. Most of these studies demonstrated the empirical validity of the STCA.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: No specific populations identified. However, it can be assumed that the test was designed as a screening for clerical workers.

B. Skills Needed: Although the reading level is not stated in the manual, it is estimated as high as tenth grade on business vocabulary subtest.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Because of the small type and crowded format of the test sheets, this test is not useful for visually disabled persons in its present form.

B. Deaf: Because of the Oral Directions subtest, the STCA could not be given to this population.

C. Mental Retardation: Because of speeded testing conditions, and high vocabulary level, this test is not suggested for this population.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Any braille or large print modifications would have to include lengthening the time limit. The test format makes the STCA difficult for this group.

B. Deaf: The major problem with modification is the Oral Directions subtest; it is doubtful that it could be translated into signing or total communication without much loss of content; this content is needed to respond to the questions.

C. Mental Retardation: This test is not recommended for this group.

VII. SUBJECTIVE COMMENTS: Norms on specific occupational groups are not represented at all by minority groups. The Filing subtest is very similar to Filing subtest of the SRA Office Skills Test. One plus is that all subtests do not have to be administered to each client. The manual suggests a specific test for some occupations. The STCA reported reliability and validity are impressive for a clerical test.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates--Industrial Systems

B. Copyright Date: 1960, 1973

C. Manual Update: 1973

SOCIAL AND PREVOCATIONAL INFORMATION BATTERY (SPIB)

I. PURPOSE: "Designed to assess knowledge of certain skills and competencies regarded as important for the community adjustment of educable mentally retarded students."

II. SUBTESTS: A total of nine subtests include: Purchasing Habits, Budgeting, Banking, Job Behavior, Job Search Skills, Home Management, Health Care, Hygiene and Grooming, and Functional Signs.

III. TEST CHARACTERISTICS:

A. Format: In answer booklet client fills in an oval shaped "bubble" under the word true or false to indicate answer. This method varies slightly on the Functional Signs subtest. Test questions are read by evaluator to client. Each subtest has an average of 30 items.

B. Administration: Must be administered by evaluator to individual or no more than group of ten. Each subtest requires approximately 20 to 30 minutes to administer.

C. Scoring: The answers are indicated on a separate answer sheet. Each subtest requires approximately ten minutes or less to score.

D. Norms: Data collected in early 1970's on 453 junior and 453 senior high school EMR students in Oregon. Specific information in Technical Report of SPIB and not in the Examiner's Manual.

E. Reliability and Validity: Internal consistency was suggested by the correlation coefficients of .94 for junior high and .93 for senior high for the total battery. Test-retest coefficients presented are .62 to .94; subtest and total battery included predictive validity data. Coefficients ranged from .78 to .88. Concurrent validity study was also presented with correlations that appeared acceptable but somewhat lower. Reliability and validity information in Technical Report only, not in Examiner's Manual.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Junior and senior high mentally retarded and educable mentally handicapped students.

B. Skills Needed: Pencil usage to fill in circles, third grade reading level on one section of one subtest.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Not useful in present form.

C. Mental Retardation: Very useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Most of the responses to the test items are True/False. The True/False format could easily be modified to a sort-test-item method of responding. A braille stylus or typewriter could also be used to indicate responses. Individuals could raise their left hand for true and right hand for false.

B. Deaf: For the deaf individual the questions could be provided in a simple written format or signed.

C. Mental Retardation: No modification necessary.

VII. SUBJECTIVE COMMENTS: Some of the test statements are negatively presented (e.g. not or no) which may make the true-false concept more difficult for some clients to understand. In addition, even though the SPIB is only about ten years old, several evaluators have commented about the SPIB's datedness. The pictures and lack of color may make it appear like an old, out-of-date test. The Job Behavior, Job Search Skills, and Functional Signs are the three subtests used more frequently than others.

VIII. ORDERING INFORMATION:

A. Available From: CTB/McGraw-Hill

B. Copyright Date: 1975 until 10/01/85

C. Manual Update: 1975

SRA CLERICAL APTITUDES

I. PURPOSE: This test "measures the most important general aptitudes necessary for clerical work," indicating the ability to learn the tasks often required in various clerical jobs.

II. SUBTESTS: Office Vocabulary, Office Arithmetic, and Office Checking.

III. TEST CHARACTERISTICS:

A. Format: The test booklet consists of nine sheets. A separate carbon answer sheet automatically records answers as right or wrong. The Office Vocabulary is a same-opposite-neither list of words; the Office Arithmetic is reading problems with five choices; the Office Checking requires matching numerical codes with words.

B. Administration: Each subtest is administered and timed separately. Total battery requires approximately 35 minutes and is usually administered to groups.

C. Scoring: Correct answers are summed for each subtest and for a total score. Scores are converted to percentiles on the self-interpreting profile sheet. The test can be self-scored.

D. Norms: The test was normed on two groups: (1) high school students by grade and sex and (2) applicants for clerical jobs, mainly in large Northern cities. Both groups are of adequate size.

E. Reliability and Validity: Reliability coefficients across all subtests and high school norms by grade and sex ranged from upper .60's to .90. Predictive or concurrent validity are not discussed. Internal correlations between students and correlations with other tests briefly discussed.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: No specific populations identified.

B. Skills Needed: The reading level is not identified, but is estimated at seventh grade; visual acuity is also needed (some of the word problems are in small print with little space between lines).

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not usable in present form.

B. Deaf: The test should be appropriate for those clients who can read the instructions.

C. Mental Retardation: May be appropriate for borderline mentally retarded persons with sufficient reading skills for test items.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Blind clients could successfully answer the subtest on word definitions if given orally. Since the other two subtests deal with visual perceptions, these would present difficulties. Thus, the SRA Clerical Aptitudes is really not appropriate for this population.

B. Deaf: Should be appropriate for use if the timing of the test were by some visual method, such as turning the lights on and off.

C. Mental Retardation: If the instructions are gone over in detail so that the client completely understands them, the test should be usable. Additional practice items may be added. The arithmetic subtest may be too difficult.

VII. SUBJECTIVE COMMENTS: Sketchy statistical information and high school norms are major problems. In general, the test does not offer a unique assessment of clerical aptitudes. There is no reason to select this over most other clerical tests.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates

B. Copyright Date: 1950

C. Manual Update: Not applicable

SRA PICTORIAL REASONING TEST (PRT)

I. PURPOSE: A general ability test used "...to measure the learning potential of individuals from diverse backgrounds with reading difficulties, whose potential for training and employment cannot readily and validly be measured by verbal instruments." PRT is presented to clients as a "test to see how carefully and quickly you can observe and reason."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Each item in the 80-item test booklet includes a series of five pictures, one of which is not related to the general theme suggested by the other four. Client marks unrelated picture with an "x".

B. Administration: The PRT can be administered to individuals or groups; either timed (15 minutes) or preferably untimed (reviewers estimate 25 minutes).

C. Scoring: Responses are automatically recorded through a carbon to another sheet. The number of correct responses are converted to a percentile for interpretation purposes. Scoring process takes approximately 20 minutes.

D. Norms: Timed and untimed percentile norms are presented on various industrial (1972) and educational (1967) samples. Some demographic data are presented. All samples are of adequate size.

E. Reliability and Validity: Kuder-Richardson reliability correlations (KR-20) on untimed administration ranged from .59 to .83, somewhat lower than what is expected in a test of this type. Reported validity studies included correlations between the PRT and education, industrial, research, and other tests. While correlations with the WAIS and Lorge-Thorndike Intelligence tests were generally moderate, correlations between the PRT and school grades were generally low, with most being nonsignificant. Finally, correlations with an overall rating of job success on 25 separate occupations produced mixed results--there were more significant correlations in semi-skilled jobs than in jobs that required greater degrees of skill. These attempts at validation lead to the conclusion that the test has demonstrated some degree of validity.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Ages 14 or older with some high school education preferred. Individuals with reading difficulties, dropouts, or in adult basic education programs, etc. were also mentioned.

B. Skills Needed: Good vision; pencil usage for answer marking. Instructions are at approximately the sixth grade reading level but are read aloud by examiner.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Should be very useful.

C. Mental Retardation: Should be fairly useful.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Cannot be modified for the blind.

B. Deaf: The test should be useful in present form for this group. Any modification would center around extra practice exercises. With both deaf and mentally retarded the test should be given untimed and the untimed norms used.

C. Mental Retardation: Any modification would center around extra practice exercises.

VII. SUBJECTIVE COMMENTS: The PRT can yield a general indication of how well a client functions--especially a nonreading client or one from another culture. The test is intended to eliminate or reduce cultural bias and, according to the data published in the manual, it partially achieves this goal. The major technical problem is the fairly low reliabilities. Pictures are small, detailed, and not always clear. Client's responses do not always register properly through carbon. The test idea is a solid one.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1967, 1973

C. Manual Update: 193

SRA TEST OF MECHANICAL CONCEPTS

(Forms A and B)

I. PURPOSE: The SRA Test of Mechanical Concepts is a test of "basic mechanical ability. It is designed to measure an individual's ability to visualize and understand basic mechanical and spatial interrelationships... also a measure of... common mechanical tools and devices."

II. SUBTESTS: There are three subtests: (1) Mechanical Interrelationships, (2) Mechanical Tools and Devices, and (3) Spatial Relations.

III. TEST CHARACTERISTICS:

A. Format: Each of the three subtests is multiple choice, with the number of alternatives varying from two to five. The Mechanical Interrelationships subtest (24 items) contains illustrations of pulleys, jacks, etc. Mechanical Tools and Devices contains (30 items) illustrations of mostly hand tools. Spatial Relations contains (24 items) drawings of two-dimensional figures.

B. Administration: This untimed test can be administered to groups or individuals. Most persons complete it in 40 minutes or less. All answers are marked in a self-scoring booklet.

C. Scoring: Responses are automatically recorded through a carbon to another sheet. The number of correct responses for each part and the total score are converted using the appropriate norms. Scoring should take about 10 minutes or less.

D. Norms: Norms are available on the following groups: national, midwest, and black, industrial; national, midwest, south, east, and west educational; and female educational. Most normative groups are of small size and samples are not fully described.

E. Reliability and Validity: Equivalent form and KR-20 reliabilities are presented in the manual; both are at very acceptable levels. Correlational studies between the test and criterion of school grades or supervisor's ratings were mostly significant.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual mentions a variety of uses within industrial and educational settings. Examples of several blue collar jobs are given.

B. Skills Needed: Good visual acuity, an estimated sixth grade reading level, and ability to hold a pencil are needed.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Should be useful for persons with the needed reading skills.

C. Mental Retardation: Should be useful for persons with the needed reading skills.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Because of the heavy visual content, this test could not be modified for this population.

B. Deaf: The test should need little modification for this group. Careful monitoring and encouragement should be enough.

C. Mental Retardation: The addition of a few more practice items and close monitoring should make the test useful for borderline and mildly retarded persons.

VII. SUBJECTIVE COMMENTS: The test could be used as a basic measure of mechanical aptitude. The item content in all three subtests appears to be meaningful. One of the major advantages of the test is the fact that it is untimed; this eliminates one of the key problems with any modification. The major problem with the test is the lack of adequate norming procedures. In spite of this problem, the test could be very useful.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1976.

C. Manual Update: None

INTELLIGENCE

CULTURE FAIR TESTS (IPAT or Cattell)

SCALES 1, 2 and 3, FORMS A or B

I. PURPOSE: A nonverbal instrument intended to "measure individual intelligence with minimized influence from verbal fluency, cultural climate, and educational level."

II. SUBTESTS: Scale 1 has eight subtests: Substitution, Classification, Mazes, Selecting Named Objects, Following Directions, Wrong Pictures, Riddles, and Similarities. Scales 2 and 3 have four subtests at a much more difficult level: Series, Classifications, Matrices, and Conditions (topology). Form A is the short form and Form A plus B is the full test.

III. TEST CHARACTERISTICS:

A. Format: Scale 1 has 96 items. Scale 2 consists of 46 items and Scale 3, 50 items. All tests have mostly picture content. Client may indicate responses on either the test booklet or on a separate answer sheet.

B. Administration: All scales are timed and administration time to groups or individuals ranges from approximately 15 minutes for the short version and 30 minutes for the full test.

C. Scoring: Different hand scoring keys are used--depending on whether client uses separate answer sheet or responds in test booklet. Hand scoring requires approximately 15 minutes. Scale 2 is machine scoreable.

D. Norms: Norms on Scale 1 were developed on 400 American and British subjects. Scale 2 norms were based on over 4,000 males and females in the U.S. and Britain. The Scale 3 norm group consists of over 3,000 American high school students and young adults in a "stratified job sample." Norms were collected in the 40's and early 60's, although more recent data is available in the Technical Manual. The manual does not contain an adequate description of the standardization samples or how they were selected or tested.

E. Reliability and Validity: Reliability coefficients over items, parts, and time for Form A and for Forms A and B ranged from .67 to .87. Reliability coefficients for both scales and both formats were in the .80's and .90's. Validity correlation coefficients with other tests were in the .60's and .70's. However, studies predicting academic performance and school achievement yielded much lower correlation coefficients. Detailed information is in the Technical Supplement.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Scale 1 is intended for use with mentally retarded adults. Studies have also demonstrated that this test can be successfully administered to disadvantaged, illiterate, deaf and others who are culturally, physically or mentally different. Scale 2 is typically used with individuals eight years of age or older with an estimated average IQ. Scale 3 is slightly more advanced and used for college students and intellectually above average individuals.

B. Skills Needed: Clients must be able to perceive relationships in shapes and figures for Scales 2 and 3.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not usable in present form.

B. Deaf: The test is very appropriate.

C. Mental Retardation: Scale 1 would be most appropriate for the mentally retarded client.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Because the IPAT deals with visual perceptions, it is not appropriate for blind clients even with extensive modifications.

B. Deaf: The visual nature of the IPAT, except the Following Directions Test, makes test content very appropriate for the deaf person. The major problem is making sure the person understands the instructions. These would have to be given to the client by signing, lip reading, or total communication. An alternative for those clients who can read is to prepare simplified written instructions and then to place these on cards together with additional practice items. The practice items would be used to make certain the client understands the instructions. Because this process increases the administration time, the IPAT should be given in two sessions.

C. Mental Retardation: Scale 1 could be individually administered to the client. There is also the possibility that severely retarded persons may require additional practice items.

VII. SUBJECTIVE COMMENTS: Because the IPAT has a mean of 100 with a standard deviation of 16, it is easily compared to other intelligence tests. It appears to be an adequate intelligence test for nonreaders.

VIII. ORDERING INFORMATION:

A. Available From: Institute for Personality and Ability Testing or IPAT.
B. Copyright Date: 1959, 1960, 1973
C. Manual Update: 1973

OTIS-LENNON MENTAL ABILITY TEST - ADVANCED LEVEL (OTIS-LENNON)

I. PURPOSE: The Otis provides "comprehensive, carefully-articulated assessment of the general mental ability, or scholastic aptitude, of pupils in American schools." It measures broad reasoning abilities, or "g".

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Client chooses one of five responses he/she believes makes the statement or picture true in the 80-item test booklet. Item types vary and include vocabulary, mathematics, analogies, pattern completion, etc. A separate answer sheet is provided with machine scored version. The IBM answer sheets must be completed with an electrographic pencil. The answers may also be marked in the test booklet.

B. Administration: The test is designed for classroom (group) administration with a 40 minute time limit. Approximately ten minutes more are needed for instructions, example completion, etc. The test may be individually administered to a "slow" pupil.

C. Scoring: Hand or machine scored by counting the number of questions correctly answered. Stencil overlay used with hand scored version. Raw scores converted into percentiles and stanines.

D. Norms: Generalized, national norms of pupils in various types of U.S. schools by grade and age.

E. Reliability and Validity: Split half, alternate form, and internal consistency reliability coefficients ranged from upper .80's to mid .90's. Standard errors of measurement presented for alternate forms. Studies on content, predictive and criterion related validity were mentioned but reader was referred to a technical manual for information.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: "The Advanced Level is recommended for use with typical pupils in grades 10 through 12." The Advanced Level is one of five forms of the Otis available for use with various grades.

B. Skills Needed: Reading level varied for each form. Pencil usage, visual acuity (some small detailed pictures presented).

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Marginally useful in present form.

C. Mental Retardation: Not useful in present from.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test would have to be completely designed for this population. Items would have to be made larger or translated into braille; spatial perception items would have to be made tactual. Extra practice items would be needed and the time limits changed.

B. Deaf: Hearing disabled persons would need extra practice items, close monitoring and extended time limits. Individual administration should also be considered.

C. Mental Retardation: This test should not be modified for this population.

VII. SUBJECTIVE COMMENTS: The Otis tests first appeared in the 1920's and have gone through many revisions. Extreme high or low scores considered suspect and client should be retested with a more appropriate form. This very generalized instrument with one total score is used for comparison with other students. Its use in vocational assessment would be mostly as a rough screening of general intelligence for younger clients.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1967

C. Manual Update: Not applicable

RAVEN'S STANDARD PROGRESSIVE MATRICES (Raven or SPM)

I. PURPOSE: "Designed to cover the widest possible range of mental ability and to be equally useful with persons of all ages, whatever their education, nationality, or physical condition."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: SPM is a 60-page test booklet with one problem or item per page. Each item consists of a diagram or pattern of three shapes based on some form of logic and is presented with one shape needed to make the overall pattern complete. Client must pick the missing shape from the six (Sets A and B) or eight (Sets C and D) alternatives presented at the bottom of the page. The client or evaluator records answer on separate answer sheet.

B. Administration: The Raven is an untimed individual or group administered test. Each group tested must be allowed at least one hour.

C. Scoring: Hand or machine scored. Answer sheet with a stencil key takes approximately 15 minutes to score.

D. Norms: The norms presented in manual are based on young groups (6-13 years old), foreign groups (British and Irish), old data (1930's to 1960's), or sex and age by decades.

E. Reliability and Validity: Manual states with the exclusion of studies on young groups and some other groups, the internal consistency and retest reliability is "good." Detailed criterion-oriented content, factorial, and construct validity studies were presented with varying results.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: A wide variety was mentioned in manual including young children, "mentally defective," very old adults, and people from various cultures.

B. Skills Needed: No reading required. Client must be able to see diagrams and indicate a verbal or written answer.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Useful in present form with modified instructions.

C. Mental Retardation: May be used in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: This instrument requires the client to examine a pattern with a piece left out. The client chooses the correct piece to complete the pattern as indicated. This test is very visually oriented and not appropriate for the blind population.

B. Deaf: The directions to this test are verbally presented. Modifications for the deaf may include signing the instructions or providing written instructions on card. Practice exercises would likely assist in facilitating understanding.

C. Mental Retardation: Because some of the patterns are very abstract, the test may become frustrating for the mentally retarded population. Once instructions are understood, no modifications are needed.

VII. SUBJECTIVE COMMENTS: Although norm tables were presented in the manual, interpretation of test results was not discussed. The Raven is a unique test because of its attempt to limit cultural differences. Statistical information was not clearly presented. The Raven is very useful for determining the general nonverbal intelligence of culturally different and persons who are non-verbal.

VIII. ORDERING INFORMATION:

A. Available From: Western Psychological Services

B. Copyright Date: 1958

C. Manual Update: 1936, 1938, 1949, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1951, 1956, 1958, 1961, 1964, 1966, 1969, 1972, 1974, 1977, 1980

REVISED BETA EXAMINATION - SECOND EDITION (BETA II)

I. PURPOSE: The Beta II is "...designed to measure the general intellectual ability of persons who are relatively illiterate, or non-English speaking, or have other language difficulties." The test yields a single intelligence final score that is presented either as an I.Q. or a percentile score.

II. SUBTESTS: The Beta II's six unnamed subtests, identified by problem type, are: Mazes, Coding, Paper Form Boards, Picture Completion, Clerical Checking, and Picture Absurdities.

III. TEST CHARACTERISTICS:

A. Format: The 15 page test booklet contains the problems or items and client responds directly in the booklet. The test is highly speeded.

B. Administration: The test can be either group or individually administered; group administration takes about 30 minutes. Prior to each subtest, the administrator reads the instructions and monitors the completion of the practice exercises. Spanish instructions are contained in the manual.

C. Scoring: The test is hand-scored with a stencil in about 15 minutes. A separate raw score is obtained for each subtest. These are converted and totalled for a single final score.

D. Norms: The test was standardized on a national stratified sample of 1,050 persons between the ages of 16 and 64. Sex, racial, composition, occupation, and geographic region were considered. The sampling plan was well thought out and all samples are described in detail. Norms are available on seven age groups: (1) 16-17, (2) 18-19, (3) 20-24, (4) 25-34, (5) 35-44, (6) 45-54, and (7) 55-64.

E. Reliability and Validity: A test-retest correlation of .84 over a three week interval was found. While this is quite accurate, the Beta II manual should contain additional reliability data. The manual attempts to establish the validity of the Beta II in two ways: First, correlations between the first Beta edition and the Beta II were established. Because these were high (.84 and .93), it was assumed that the validity studies established for the first editions apply to the Beta II. Second, correlations between the Beta II and WAIS I.Q.'s were given for two age groups (18-19 and 35-44); full scale I.Q.'s correlated .64 and .66 with the Beta II.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Public offenders, non-English speakers, and unskilled industrial workers are specified. Also useful for Spanish speakers with Spanish language instructions. Although intended for a general adult population, the Beta II should not be given to exceptionally able examinees.

B. Skills Needed: Limited pencil usage, visual acuity, fine finger dexterity to trace mazes.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not usable in present form.

B. Deaf: Usable with slight modifications.

C. Mental Retardation: Usable in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Because the Beta II is a very visually oriented test, modifications would not be feasible.

B. Deaf: The visual content and option for individual administration, makes the test very useful for persons with a hearing loss. The problem is in giving the instructions, which could be signed or placed on cards for the client to read. The Beta includes several practice items for each subtest, together with instructions that the examiner carefully check the client's performance on each. The examinee who cannot understand the signing and who cannot read could be administered the test if the examiner reviews the practice exercises with the examinee. Because the Beta II is a highly speeded test, the examiner may want to experiment with the time limits. The evaluator must be aware, however, that the manual emphasizes strict adherence to the time limits.

C. Mental Retardation: Usable in present form. Extra attention may need to be given to the client's performance on sample problems. Allowing extra sample problems may facilitate the examinee's level of understanding.

VII. SUBJECTIVE COMMENTS: Our experience is that most clients enjoy this test. The final I.Q. score on the Beta II is often consistently lower than estimated. Because the subtests have short administration times, the evaluator must carefully monitor each client. The norm base is current and adequate and test administration procedures consider that persons with little (positive) experience with testing should be given the Beta II. This potentially useful test, however, could benefit from a program of ongoing research.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation.

B. Copyright Date: 1974, 1978

C. Manual Update: 1934, 1946, 1957, 1974, 1978

SLOSSON INTELLIGENCE TEST (SIT)

I. PURPOSE: To evaluate an individual's mental ability; designed to be used by a wide group of professionals; designed so that administration and scoring are simultaneous.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Evaluator reads test items to client and scores response as a plus or minus on a separate score sheet. Each question has a corresponding chronological age which is used to help determine the starting item.

B. Administration: Individually administered requiring approximately 30 minutes.

C. Scoring: Scoring occurs during one administration. A formula is then applied to determine mental age, IQ, percentile rank, etc.

D. Norms: 1981 data appeared based on representative group of U.S. subjects with several demographic variables mentioned.

E. Reliability and Validity: Test-retest reliability coefficient of .97 obtained. Standard errors of measurement are reported. Extensive criterion related validity studies generally reflected high correlations. Refer to manual for indepth information.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: General population. Modifications briefly mentioned in manual for mentally retarded, educably mentally handicapped, offenders, blind, deaf, psychiatric patients.

B. Skills Needed: Listening and speaking.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Fairly useful in present form.

B. Deaf: Not usable in present form.

C. Mental Retardation: Useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The manual suggests that items requiring visual ability be omitted or modified as needed. Caution is advised in scoring the instrument if items are omitted.

B. Deaf: A modification suggested by the manual for the deaf client who can read includes showing the questions and covering up the answers. For the deaf non-reader, another type of test is recommended.

C. Mental Retardation: No modifications necessary.

VII. SUBJECTIVE COMMENTS: Instrument is not sufficiently valid for individuals below the age of four. The test actually takes longer than the stated ten to 20 minutes to give. Because the test is discontinued after client misses ten in a row, client often becomes frustrated toward the end. It seems to be widely accepted in educational settings.

VIII. ORDERING INFORMATION:

A. Available From: Western Psychological Services

B. Copyright Date: 1961, 1962, 1963, 1977, 1978, 1981

C. Manual Update: 1962, 1963, 1977, 1978, 1981

INTEREST

CAREER ASSESSMENT INVENTORY (CAI)

I. PURPOSE: To identify interests through an inventory which is oriented toward the more "nonprofessional" end of the world of work.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The inventory describes various activities, school subjects, and occupations. For each item, the examinee is given five choices which range in degree of preference. The examinee circles his/her choice of preference.

B. Administration: Average administration time for this untimed test is 30-45 minutes to either groups or individuals.

C. Scoring: The test is computer scored and takes approximately two weeks to receive. There is an option for receiving results in profile or interpretive format. A new, more expensive 24 hour scoring service is available.

D. Norms: The inventory is interpreted on four scales. Detailed norm information for each scale is available in the manual and appears to be representative. The norming group has 750 females and 750 males.

E. Reliability and Validity: All reliability information is reported individually on all scales in the form of test-retest correlations. Correlations ranged from .70 to .90 indicating a stable instrument. Three scales (general themes, basic interest and occupational scales) have detailed information on concurrent and construct validity. Validity was reported as good to very good on all scales.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual states that the inventory is appropriate for those who are seeking immediate career entry, or those seeking careers requiring some post secondary education. The manual made no mention of using this test with special populations.

B. Skills Needed: Sixth grade reading level or higher. Pencil usage is required to indicate answers.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Fairly usable in present form.

C. Mental Retardation: Not readily usable in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test administrator could read the written test items to the client who has a partial or complete loss of eyesight. The items could be taped for ease in administration.

B. Deaf: The written instructions on the CAI test form would be suitable given the client has adequate reading skills. If the client does not, another type of interest test is recommended.

C. Mental Retardation: The CAI is likely written at a reading level too advanced for the mentally retarded client. If the client can read at the sixth grade level or above, then the CAI would be an appropriate instrument.

VII. SUBJECTIVE COMMENTS: This inventory is very widely used. Similar to SCII in that scores may be depressed for individuals who are depressed and, therefore, the profile may appear flatter.

VIII. ORDERING INFORMATION:

A. Available From: National Computer Systems

B. Copyright Date: 1982

C. Manual Update: 1975, 1976, 1978, 1982

CAREER OCCUPATIONAL PREFERENCE INTEREST INVENTORY (COPS)

I. PURPOSE: This test is designed to determine a person's interests in 14 occupational clusters: science professional, science skilled, technology professional, technology skilled, consumer economics, outdoor, business professional, business skilled, clerical, communication, arts professional, arts skilled, service professional, and service skilled.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The interest inventory consists of 168, four alternative items in a step-down booklet. The client responds by choosing one degree of "like" or "dislike." Each item reflects "actual tasks performed in specific occupations."

B. Administration: COPS administration is very flexible; it can be administered individually or in groups and can be self-administered. Most persons complete it in 20 to 30 minutes.

C. Scoring: Machine and hand scoring forms are available. Hand scoring can be done either by the administrator or client in 10 to 20 minutes. The results are profiled and interpreted on the "Self Interpretation Profile and Guide." A computer generated report interpreting and combining the results of the three EDITS tests (i.e., COPS, CAPS and COPES) is available.

D. Norms: Two separate norm groups were used: (1) students in grades seven through 12 and (2) college level students. The normative data were collected in 1975 and 1980. The technical manual contains detailed sampling information.

E. Reliability and Validity: Split-half and test-retest validity reliability coefficients ranged from .77 to .95. Concurrent and predictive validity were discussed and some evidence for construct validity were reported. The technical manual contains complete details on the factorial makeup of the test.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The COPS was designed for high school and college students; there is a COPS II available for junior high students. No specific mention is made of special populations in the manual.

B. Skills Needed: Although the reading is not specified in the manual, we estimate it to be about the eighth grade. Pencil usage and perceptual ability to see light blue ink on white paper are needed.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: May be useful for persons with sufficient reading skills.

C. Mental Retardation: Not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test items would have to be translated into braille or recomposed into large type. Each item could be printed on a separate card and these cards sorted into four piles, one for each alternative.

B. Deaf: If the person could read at the appropriate level, no modification is necessary. Before using the COPS for deaf persons, the examiner should carefully review the item contents, especially those in the Communication Scale. The content of these items is heavily weighted with items on verbal skills.

C. Mental Retardation: Because of the reading level and the educational attainment implied by the items and the interpretation materials, the COPS should not be modified for this population.

VII. SUBJECTIVE COMMENTS: The COPS appears to be a useful inventory for occupational exploration. The self-administration, scoring, and interpretation features of the instrument make it an attractive, versatile instrument. The major concern with the instrument is that it is apparently designed for persons who have the abilities and motivation for college or technical training. Very few entry level and semi-skilled jobs are included in the interpretation material.

VIII. ORDERING INFORMATION:

A. Available From: EDITS

B. Copyright Date: 1974, 1982

C. Manual Update: 1982

GEIST PICTURE INTEREST INVENTORY REVISED (GPII-R)

I. PURPOSE: The Geist quantitatively assesses 11 male and 12 female general interest areas (e.g. outdoor, artistic, mechanical, personal service) and identifies motivations behind choices (e.g. family, financial, and past experience).

II. SUBTESTS: There are no subtests. There are separate male and female test booklets, as well as separate male and female motivation questionnaire booklets.

III. TEST CHARACTERISTICS:

A. Format: In both forms the client circles the preferred picture in a triad. The female form has 27 vocational picture triads; male form has 44 triads. Written questions under each triad are read by the client; these questions are intended to focus attention on content of the pictures rather than "status" associated with pictures.

B. Administration: This untimed, self-administered test is given to individuals or groups and takes roughly 20 to 40 minutes to complete. The written questions have an estimated fourth grade reading level.

C. Scoring: The Geist is hand scored by counting circles under each interest area and then converting into T scores on an interpretive interest profile.

D. Norms: Separate norm tables (1956 data) for males and females provide data on several groups including: school grades, education, occupational groups, delinquents, VR clients, and psychopathological groups. Some sample sizes are not given at all and those that are have very small N's.

E. Reliability and Validity: Male form test-retest coefficients ranged from .62 to .87. Female form test-retest coefficients "in nearly every instance are of high statistical significance." Empirical validity studies and "mostly significant" correlations with Kuder presented in manual; there are some intercorrelations between test scales and the occupations of employed workers.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Individuals with reading difficulties and populations described under norms are specified.

B. Skills Needed: Pencil usage, visual acuity and limited reading skills (i.e. fourth grade) are needed.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Useful in present form if client has basic reading skills.

C. Mental Retardation: Useful in present form if client has basic reading skills.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The visual contents of the Geist make it impossible to modify for visually disabled persons.

B. Deaf: The test administrator could read the question under each picture and then wait for all to respond to the item. The test should require no more modification.

C. Mental Retardation: The procedures for deaf persons are applicable here. The evaluator should explain the instructions in greater detail and have additional practice items.

VII. SUBJECTIVE COMMENTS: The motivation questionnaire is not mandatory and when used increases administration time considerably. The statistical information is both lacking and not clearly presented. The manual states that the GPII-R does not limit the vocational choices of the poor reader; this simply is not true. Sex biases were evident in that only females were considered for "personal service" scale. The major advantage of the Geist is the picture format and the attempts to control for occupational status. The interest inventory is seriously dated by its normative groups and the separate male and female forms.Our impression is that the Geist appears to be aimed at a sheltered population.

VIII. ORDERING INFORMATION:

A. Available From: Western Psychological Services

B. Copyright Date: 1964, 1971, 1975

C. Manual Updates: 1971, 1975, 1982

INTEREST CHECKLIST (ICL)

I. PURPOSE: No manual exists for this checklist. An instruction sheet states the ICL is useful with clients "who have no definite stated work interests or who are not aware of the variety of jobs and occupational fields that exist."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Consists of 210 work activity statements. Client checks "like," "uncertain," or "dislike" beside each statement. The items are grouped in sets of three; each set reflects a sampling of the jobs found in The Guide for Occupational Exploration.

B. Administration: This self-administered checklist can be done individually or in groups in approximately 25 minutes.

C. Scoring: The ICL is considered a counseling aid and, therefore, is not scored. Rather, the client and counselor review the list and discuss client responses in order to identify client's vocational interests.

D. Norms: Not applicable.

E. Reliability and Validity: The lack of statistical information is consistent with the fact that this is a checklist, not a scored test.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Not specified.

B. Skills Needed: Pencil usage. Reading level is not specified, but is estimated at eighth grade or above.

V. USEFULNESS IN PRESENT FORM:

A. Blind: The ICL is not useful in present form.

B. Deaf: It is useful in present form for clients having the estimated reading level.

C. Mental Retardation: It is useful in present form for clients having the estimated reading level.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Any modification of the ICL must center on the fact that it is a counseling aid and not a psychometrically sound interest inventory. Because there is no validity to destroy in modification, the ICL can be substantially modified for all disability groups. For use with the blind, the ICL could be placed in a braille or large print format. However, since it is a counseling tool, it could be orally administered by the evaluator, with the actual items interspersed with other questions, explanations, or comments.

B. Deaf: As with the blind, we suggest individual administration as a counseling tool. Actual administration of the items would best be done using total communication.

C. Mental Retardation: Again, individual administration as a counseling tool is suggested. In this format, the counselor can deal with items needing additional explanation.

VII. SUBJECTIVE COMMENTS: According to the instruction sheet, one advantage of a non-scoreable checklist like the ICL is that it permits joint counselor-client exploration. Furthermore, it is believed that such discussions may help "insure more realistic interpretations and will help determine the appropriate direction of occupational exploration." The ICL is not to be used as if it were a valid instrument. It is misused when instead of facilitating counselor-client exploration, the interests are sometimes listed in "iron-clad" report format. It can also be time-consuming. Lack of a manual is a serious limitation.

VIII. ORDERING INFORMATION:

A. Available From: U.S. Department of Labor, Employment and Training Administration and Superintendent of Documents, Washington, D.C.

B. Copyright Date: 1979

C. Manual Update: None specified

KUDER OCCUPATIONAL INTEREST SURVEY (KOIS)

FORM DD

I. PURPOSE: By identifying interests in relation to occupations or occupational categories the KOIS provides information to aid in vocational choices or selecting a tentative field of study.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The KOIS contains 100 triad items each containing three statements of different activities. The examinee chooses one activity in the triad he/she most likes and the activity he/she least likes.

B. Administration: This untimed, group or individually administered test takes about 30 to 40 minutes to complete. The items are printed on the answer sheet; no separate test booklet is required.

C. Scoring: The interest inventory must be machine scored; each examinee receives a profile sheet plotting his/her results. The KOIS contains a total of 171 separate occupational and college major scales.

D. Norms: Each scale was developed on a separate group of employed workers or students. The scales for all occupational groups were developed on workers employed in these occupations. Students majoring in specific academic areas gave the data for the college major scales. All groups are clearly described in the manual.

E. Reliability and Validity: Test-retest reliabilities over a two-week period were reported as .93 to .96. The reliability was also defined in terms of consistency of the differences between scores or each pair of scales. These are at acceptable levels. The manual presents no evidence that the KOIS can predict future job success based on interest. However, data on classifications of presently employed workers according to their interests were presented.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The KOIS is useful for the following groups: high school juniors and seniors, college freshman, and adults in employment counseling.

B. Skills Needed: The following skills are needed: (1) sixth grade reading level or above, (2) use of a pencil, and (3) good visual acuity.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: It is potentially useful for deaf persons with high reading and comprehensive skills.

C. Mental Retardation: Not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Because of the size of the print and the lack of contrast between print and paper colors, persons with even mild visual problems may have difficulty reading the items. The KOIS items could be administered by audio tape or in a large print format, with responses recorded on tape or enlarged answer sheet. Because some KOIS items refer to activities legitimately beyond a visually or hearing disabled person's experiences, the results must be interpreted with caution.

B. Deaf: The deaf person would need a few more examples to ensure that he/she knows how to respond to the test items. The person would also need fairly high reading and comprehension skills. The warning about item content given above also applies here.

C. Mental Retardation: This test cannot be modified for this group.

VII. SUBJECTIVE COMMENTS: Because the KOIS covers a variety of occupations, has scores on college major interests, and combines male and female occupational interests, it has a wide variety of uses within the evaluation setting. The KOIS is definitely intended for use with higher functioning persons who have the ability for additional training and education, or with adults seeking new careers.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1966, 1968, 1975

C. Manual Update: 1974

REVISED READING-FREE VOCATIONAL INTEREST INVENTORY (RFVII)

I. PURPOSE: "A nonreading vocational preference test for use with the mentally retarded and learning disabled persons from age 13 to adult."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: From each of the 55 pictorial triads the client circles the one occupational activity he or she would like most to do.

B. Administration: This group of individually administered untimed tests takes approximately 45 minutes to complete including instructions.

C. Scoring: Hand scored in 15 to 20 minutes using a grid attached to test booklet. The scores are converted to T scores and percentiles to reflect areas of interests.

D. Norms: Data were collected in 1980-81 on a nationwide sample of educable mentally retarded and learning disabled males and females in grades seven through 12 in public schools, sheltered workshops and vocational training centers.

E. Reliability and Validity: Test-retest reliability coefficients are in the .70's and .80's, a high reliability level. More detailed information is available in manual. Validity reported in the form of content, concurrent, and "occupational" are described as being "good" on all levels.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual identified the use of this test with educable mentally retarded persons, learning disabled and adult sheltered workshop persons.

B. Skills Needed: No reading is required. Pencil usage is required to identify the favored picture.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not at all useful.

B. Deaf: Fairly usable except for verbal instructions.

C. Mental Retardation: Very useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: This instrument is a visually oriented interest inventory for non-readers. Modifications are not feasible.

B. Deaf: Instructions for this test require minimal modification and may include gesturing, signing and written instructions.

C. Mental Retardation: No modifications are necessary.

VII. SUBJECTIVE COMMENTS: The older version of the RFVII, often referred to as the Becker (1975), was developed for use with mentally retarded individuals and was criticized in the literature for its limitations. The new version, referred to as the RFVII, reportedly has better statistical data and may be used with a wider range of populations including learning disabled. Both manuals are still in active circulation. The evaluator is encouraged to be aware of the specific manual being utilized, 1975 or 1981.

VIII. ORDERING INFORMATION:

A. Available From: American Association on Mental Deficiency

B. Copyright Date: 1975

C. Manual Update: Revised 1981

STRONG-CAMPBELL INTEREST INVENTORY (SCII)

I. PURPOSE: The SCII is "intended to help guide persons into an area where they are likely to find the greatest job satisfaction." The following types of scores are given: (1) six general occupational themes (e.g. realistic, enterprising, and social); (2) 23 basic interest scales (e.g. nature, social science, and sales); (3) 124 occupational scales (e.g. occupational therapist, lawyer and biologist) and (4) nine administrative and special indexes (e.g., school subjects, activities and amusements. Final scores are presented on a printout with standard scores and percentile bands, which indicate the percent of agreement between the client and the responses of the persons composing the scoring groups on which each particular scale was based.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The SCII is divided into three sections: occupations, school subjects, and activities. For each item the examinee darkens a circle for either "Like," "Dislike," or "Indifferent."

B. Administration: The SCII can be administered individually or to groups in about 30 minutes. The test is untimed. The items are printed on the answer sheet; no separate test booklet is required.

C. Scoring: Machine scoring provides a computer printed profile for all scores or a several page interpretive printout. Scoring takes about two weeks. A new, more expensive 24 hour computer scoring service is also available.

D. Norms: The Strong inventories have used a separate occupational group for each scale and then compare the results to men-in-general and women-in-general groups. The manual devotes considerable length to the problems of sex bias and differences in scoring. All samples are clearly described. The items in the SCII are taken from the earlier Strong Vocational Interest Blank and, thus, the tremendous amount of data collected for the SVIB applies to the SCII.

E. Reliability and Validity: Some validity data are presented in the manual for the SCII. However, "a substantial body of such data is available for the earlier scales, these data are relevant for them also." The SCII is one of the most thoroughly researched and validated instruments available.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual suggests this inventory be administered to persons over 17 having potential for advanced training.

B. Skills Needed: Sixth grade reading (or slightly higher) and pencil usage are needed. Because the SCII items are printed in fairly small type, the examinee needs good visual acuity.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Useful in present form for those with adequate reading skills.

C. Mental Retardation: Not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: All instructions and test items are written and included in the combination answer sheet/test booklet. The test would either need to be available in a taped version or the administrator would have to read the items aloud. For partially sighted persons, the items could be printed on separate cards; these would be sorted into piles. Regardless of the administration method, the responses would have to be copied on the answer sheet for machine scoring.

B. Deaf: Since all instructions and test items are written, a deaf person with adequate reading skills should have few problems. A non-reading interest inventory would be more appropriate for a deaf person whose reading skills are not adequate for the SCII.

C. Mental Retardation: The SCII is generally directed to persons with college or other formal training potential; it is too advanced for this population.

VII. SUBJECTIVE COMMENTS: The SCII is typically administered to persons interested in technical or "white collar" occupations. The SCII has stood the test of time and research and has become so widely accepted that it is the standard by which other interest inventories are judged. However, its use in an evaluation setting is hindered by its college orientation and item content requiring a knowledge of specific jobs and school subjects.

VIII. ORDERING INFORMATION:

A. Available From: National Computer Systems

B. Copyright Date: 1977, 1981

C. Manual Update: 1972, 1974, 1977, 1981

VOCATIONAL INTEREST INVENTORY (VII)

I. PURPOSE: Comprehensive interest inventory "designed to measure the relative strength of a person's interest in eight occupational areas": Service, Business Contact, Organization, Technical, Outdoor, Science, General Cultural, and Arts and Entertainment.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Each client has a combination test booklet/answer sheet containing 112 items. In a forced choice format, the client indicates preferred occupation (56 items) or activity (56 items) by darkening a circle beside the corresponding letter. Each item has two alternatives.

B. Administration: This group of individually self-administered tests can be completed in approximately 25 minutes.

C. Scoring: The VII is computer scored and returned in approximately ten days with a Profile of Scores (occupationally oriented) and a College Major Profile. Computer generated interpretive statements included.

D. Norms: Norms were based on high school juniors and seniors tested in Washington State in 1979 who were considering post-secondary education and training. Samples are adequately described and of adequate size.

E. Reliability and Validity: The manual provides detailed test-retest correlations, internal consistency reliability measures, and standard deviations for each of the eight scales. The reliabilities are quite high. Concurrent, construct, and predictive validity measures was also discussed and considered relatively good. The general impression is that the VII was a carefully constructed interest inventory.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The VII was designed for average or above average students, especially those considering further education.

B. Skills Needed: A tenth grade reading level and pencil usage to record answers are required.

V. USEFULNESS IN PRESENT FORM:

A. Blind: The VII is not useful in present form. The interest inventory is printed in two-tone purple on both sides of an 8 1/2" by 11" sheet. The low contrast print is very small.

B. Deaf: The VII can be administered to a deaf person reading at at least a tenth grade level.

C. Mental Retardation: The VII is not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The VII would have to be totally redesigned for blind persons. Items could be printed in large print or braille. A major concern is whether a visually disabled person would respond to the occupational and activity items in terms of their disability and not in terms of their interest.

B. Deaf: While the same caution given for the blind applies here, the VII could be modified for deaf persons. Some of the items could be changed to simpler language (e.g., "physician" to "doctor"; "attorney-at-law" to "lawyer"). For scoring, the examiner would have to circle the corresponding items on the VII form.

C. Mental Retardation: Because the purpose of the VII is to assess the interests of average and above students, this interest inventory should not be modified for mentally retarded persons.

VII. SUBJECTIVE COMMENTS: This technically solid inventory was designed for college-bound students. One unique aspect was the inclusion of avocational activities in the items; these were intended to broaden the idea of work beyond paid activities and can, therefore, be a useful guide for leisure activities as well. Our impression was that the VII would be very useful for all persons, disabled or not, who have the ability to benefit from higher education.

VIII. ORDERING INFORMATION:

A. Available From: Western Psychological Services

B. Copyright Date: 1981

C. Manual Update: None

WIDE RANGE INTEREST-OPINION TEST (WRIOT)

I. PURPOSE: This test "was designed to cover as many areas and levels of human activity as possible." The items contained in the inventory represent jobs which range from the unskilled to the professional evel.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Client examines a combination of three pictures in a test booklet, and then indicates the most liked and the least liked picture on a separate answer sheet. The test consists of 150 picture combinations.

B. Administration: This test can be given individually in about 40 minutes, or to groups in 50 to 60 minutes.

C. Scoring: Machine or hand scored by using stencils. Scoring and profiling can be done in about 20 minutes. The profile consists of interest areas and attitudes about working conditions.

D. Norms: Separate norms were available by sex for adults, grade 8, and grades 10 and 11. There was no national sample and the manual did not describe sampling techniques. The norms were revised in 1979.

E. Reliability and Validity: The manual section of reliability opens with a poorly reasoned blast at those who require reliability coefficients and then goes on to give some fairly high split-half reliabilities (mostly in the low .90's) for the 25 scales. The only validity information presented are correlations between the WRIOT and the old Geist Picture Interest Inventory. Given the size of the groups and the faults of the Geist, these results are almost meaningless. The manual takes the approach that the WRIOT is valid, because its developers say it is valid.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The WRIOT is typically used with non-readers. There is some information in the manual covering modifications for mental retardation, physical handicaps, blindness, and other disabilities.

B. Skills Needed: Visual acuity, pencil usage.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Fairly useful in present form.

C. Mental Retardation: Very useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test booklet consists completely of pictures. Modifications are not realistic for the totally blind. If pictures can be perceived, the instrument would be appropriate for the partially sighted. Enlarging the pictures may be a feasible modification.

B. Deaf: If client can read instructions, no modifications necessary. Otherwise, modifications would need to include signing instructions, signing simplified instructions, gesturing, or asking clients to lip read instructions. Additional practice items may be helpful.

C. Mental Retardation: Modifications are not necessary.

VII. SUBJECTIVE COMMENTS: The advantages of the WRIOT are: (1) the use of a picture format, (2) activities covering the entire occupational spectrum and (3) its potential usefulness with persons having a variety of handicapping conditions. The WRIOT successfully avoids the faulty reasoning that picture interest inventories are for persons who cannot read. The problems with the tests are technical: (1) lack of an adequate normative base, (2) problems with the reliability, (3) the almost total disregard for validation, (4) interpretive information is based on examples rather than specific rules and (5) interpretation of attitudes appears fairly subjective.

VIII. ORDERING INFORMATION:

A. Available From: Jastak Associates, Inc.

B. Copyright Date: 1979

C. Manual Update: 1972, 1979

WORK ATTITUDE AND BEHAVIOR

CAREER ORIENTATION PLACEMENT AND EVALUATION SURVEY (COPES)

I. PURPOSE: "Assist examinees through increased self-awareness in relation to their career development." Measures personal values important in work and other activities on eight bi-polar scales: Investigative vs. Accepting, Practical vs. Carefree, Independence vs. Conformity, Leadership vs. Supportive, Orderliness vs. Non-compulsive, Recognition vs. Privacy, Aesthetic vs. Realistic, Social vs. Self-concern.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: In response to "I value activities on jobs which I..." the client must choose one out of two completion statements from a 128 self-scored or 160 machine-scored item test booklet.

B. Administration: This untimed, self-administering interest inventory is administered to individuals or groups in 30 to 50 minutes.

C. Scoring: Machine or hand scored in approximately 20 minutes. Hand scored version is converted to a profile sheet with brief interpretive statements.

D. Norms: Norms were gathered in the late 1970's and based on a national sample of 6,253 intermediate and high school students in grades seven through 12 and 700 community college students.

E. Reliability and Validity: Split-half reliability coefficients measuring internal consistency ranged from .72 to .81. Construct validity studies on several measures were presented in detail. Other studies correlated COPES with outside criteria such as other instruments and grades in school.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Although no special populations are identified in manual, COPES is useful for seventh grade through high school, college and adult.

B. Skills Needed: The reading level is not identified and is estimated to be between the sixth and eighth grade; pencil usage needed.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: May be useful in present form.

C. Mental Retardation: May not be useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The COPES would have to be completely revised for this population. Items could be tape recorded, translated into braille, or placed in large print format. The evaluator must provide extra examples. A short break about half way through the test may also be useful.

B. Deaf: One problem with COPES is the fairly high vocabulary, for example: "architectural," "independent," and "uppermiddle class." Some items would have to be rewritten. A deaf person with adequate skills should have little problem with the COPES.

C. Mental Retardation: As with the deaf, some vocabulary words may need to be changed. We suggest that this test only be used with higher functioning mentally retarded persons.

VII. SUBJECTIVE COMMENTS: The COPES, aiming at self-interpretation, provides a separate information sheet to clients which briefly describes the purpose for taking the instrument. Although the scales appear to be good descriptions of people, specific job descriptions are not of high quantity. The COPES is commonly combined with the CAPS (page 58) to provide a comprehensive aptitude-interest profile. The CAPS-COPES system is very useful for general screening and counseling high school students and young adults.

VIII. ORDERING INFORMATION:

A. Available From: EDITS

B. Copyright Date: 1977, 1981

C. Manual Update: Not applicable

EIGHT STATE QUESTIONNAIRE (8SQ)

FORMS A AND B

I. PURPOSE: The 8SQ measures eight emotional states or moods (i.e. anxiety, stress, depression, regression, fatigue, guilt, extraversion, and arousal) in an attempt to assess how a person will react to different environmental conditions or to changes in environmental conditions.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The two separate forms (A or B) of the test booklet contain 92 mood statements on a four point scale without a neutral point. The client chooses one of four responses as to how statement relates to him/her (e.g., very true to very false) at the present time.

B. Administration: This untimed and mostly self-administered test can be given to groups or individuals in about 20 to 25 minutes. The examiner may deviate from the written instructions in order to get instructions across to client. A separate answer sheet is required.

C. Scoring: The 8SQ can be either hand scored with stencils in approximately 15 minutes or machine scored. Raw scores on eight scales converted to stanines and/or percentiles.

D. Norms: The 8SQ was standardized on a national sample of "typical non-hospitalized adults" across socioeconomic levels, ethnic backgrounds, and geographic areas with a slightly higher representation of college-educated adults. Percent of various occupations represented in sample reported. Correctional norms provided. All norm groups are adequately described and all samples are of sufficient size.

E. Reliability and Validity: Accurate delayed test-retest reliability data were difficult to obtain since the test supposedly measures moods that were in a state of constant change. Immediate retest reliability coefficients were high; retest coefficients over time were low. The alternate form reliability coefficients ranged from .70's to upper .80's for each scale. Concept validity on the individual scales ranged from .40's to .90's.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: To be used with adults and adolescents 16 years of age or above. "Not designed for low educational levels or subgroups unassimilated into the American culture."

B. Skills Needed: "Newspaper English" with an eighth grade reading comprehension level and pencil usage are necessary.

V. USEFULNESS IN PRESENT FORM:

A. Blind: The small print of the items would make administration of this test difficult for blind persons.

B. Deaf: A deaf person with an 8th grade reading level could take the 8SQ.

C. Mental Retardation: Not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test could be administered on cassette tape, placed in a large print format, or translated into Braille. Because this test deals with personal questions, the client must be able to answer each item privately. This could be done by recording the answers on a brailler, or if self-administered, recording on a cassette tape. Prior to using this test with any handicapped group, the evaluator should carefully review the item content to determine if it is relevant for the populations.

B. Deaf: Because of the carefully worded item content, we do not recommend any changes in the items. If a deaf person cannot read at the appropriate level, we suggest that the 8SQ not be used at all.

C. Mental Retardation: Because of the item content and norming groups, this test should not be modified for mentally retarded persons.

VII. SUBJECTIVE COMMENTS: In spite of some problems with reliability, the 8SQ is a well-constructed test. The main concern is with the emphasis on how the examinee feels at the present time. This makes the test not practical for one time use only. To obtain an accurate measure of personality, the test needs to be administered several times in various situations to determine client's reactions to environmental changes or conditions.

VIII. ORDERING INFORMATION:

A. Available From: IPAT

B. Copyright Date: 1975, 1976

C. Manual Updates: Not applicable

FIRO-B AWARENESS SCALE

I. PURPOSE: Measures "a person's characteristic behavior toward other people and the behavior they want others to express toward them in the areas of inclusion, control, and affection."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Each client has a test booklet with instructions and 54 self-descriptive statements. The statements are divided into four sections and the client responds to each statement using a scale with six degrees of preference. Answers are marked in the test booklet.

B. Administration: The test requires 10-15 minutes for group administration. It may be modified for individual administration.

C. Scoring: The manual suggests self-scoring with the use of score templates. Scores can be computed on the front of the Firo-B booklets. However, interpretation of scores by the administrator is necessary, and according to the manual, takes five to seven minutes per person.

D. Norms: Norms based on Firo-B scores for 12 occupational groups with varying size, age, etc. reported in manual. Only some of the normative groups are of acceptable size.

E. Reliability and Validity: The mean test-retest reliability coefficients for six Firo-B scales of behavior were .76, a moderate reliability. Content and concurrent validity discussed in manual as being "satisfactory." The manual contains several summaries of research studies using the Firo-B.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: This instrument was used with psychotherapy groups, schizophrenics, "reticent" vs. "non-reticent" students (i.e. grades 9-12), and alcoholics. Several studies with these populations suggest general predictions rather than fine distinctions be made.

B. Skills Needed: An eighth grade reading level and pencil usage are required.

V. USEFULNESS IN PRESENT FORM:

A. Blind: The FIRO-B is not useful in present form.

B. Deaf: The test could be used with deaf persons who could read at an eighth grade level.

C. Mental Retardation: The test is not useful for this group.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Modifications for the blind would include large print or braille. Items could be printed on cards and the client could sort each item into one of the six response categories.

B. Deaf: Because a major problem with the test is vocabulary levels, any modifications would center around reducing vocabulary levels.

C. Mental Retardation: As with the deaf, reduction in vocabulary level is necessary. The length of the test is a positive factor for all handicapped groups. The FIRO-B could also be used as an aid in individual or group counseling.

VII. SUBJECTIVE COMMENTS: The FIRO-B is considered an "interpersonal questionnaire" and is a measure of a person's interpersonal behavior in the areas of inclusion, control and affection. These are common problem areas in the personal and work adjustment of many disabled persons; the test has considerable potential both as a problem identification tool and as measure of behavior change. The interpretation section of the manual is written in "I" and "you" format that makes it easier to read. However, the interpretation sections of the manual are confusing unless frequently used. The reporting of research information was cumbersome to extract and understand. These faults with the manual, while fairly considerable, should not interfere with its potential use.

VIII. ORDERING INFORMATION:

A. Available From: Consulting Psychologists Press

B. Copyright Date: 1966, 1978

C. Manual Update: 1978

FORER VOCATIONAL SURVEY (FVS)

I. PURPOSE: This projective test was designed to "study personality as it relates to vocational matters."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Client completes the 80 sentences which are presented in the two-page male or female booklet. Three sections of occupational activities are measured within the test: Reactions to Situations, Causes of Action, and Vocational Goals.

B. Administration: Group or individually administered test requires approximately 45 minutes to complete.

C. Scoring: Requires approximately 30 minutes to hand score. Client's answers must be transferred to a FVS record form sheet to organize and interpret responses.

D. Norms: No norm information provided.

E. Reliability and Validity: Not available on FVS and questionable on most projective tests.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual stated the test can be used with emotionally disturbed clients.

B. Skills Needed: Pencil usage, reading level not indicated but estimated at sixth to eighth grade.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Usable with minimal modifications.

C. Mental Retardation: Not readily useful.

VI. POSSIBLE MODIFICATIONS:

A. Blind: This test could be used for the blind population if administered and answered orally while the administrator records the answers. For the client proficient in reading Braille, the open ended questions could be translated. The client could then respond in braille or verbally.

B. Deaf: No modifications would be necessary if client's reading level were high enough. The reading level may be reduced by simplifying the wording of the questions. Such modifications, however, would be very time consuming and may unintentionally effect the meaning of the questions. Signing and/or lip reading the questions are other alternatives to reading.

C. Mental Retardation: The instrument is probably written at a reading level too advanced for the mentally retarded individual and, therefore, may be inappropriate. If questions are simplified to accommodate the MR individual's reading level, caution against altering the meaning of the questions is advised.

VII. SUBJECTIVE COMMENTS: A client with limited work experience may have trouble completing the test because of limited exposure to given situations. Clients often comment on why the same question is asked more than once and that the test is lengthy. Counselors have stated it is a good tool in vocational planning. The male and female forms are identical except for pronoun usage.

VIII. ORDERING INFORMATION:

A. Available From: Western Psychological Services

B. Copyright Date: 1974

C. Manual Update: 1957, 1974

HALL OCCUPATIONAL ORIENTATION INVENTORY - ADULT BASIC FORM (HALL)

I. PURPOSE: To help client move towards making occupational decisions in terms of inner values, needs, beliefs, abilities, and interests that client feels are important.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: Test booklet consists of 110 statements describing various aspects of work. Client marks and rates item on separate answer sheet choosing from five degrees of preference, i.e., most desirable, very undesirable.

B. Administration: Untimed inventory given to group or individuals in approximately 30 minutes.

C. Scoring: Preferably hand scored by client and transferred to a Profile sheet for interpretation and discussion of 22 scales in approximately 20 to 30 minutes.

D. Norms: The school and adult population norm groups used with item analysis were briefly discussed.

E. Reliability and Validity: Reliability coefficients for the 22 Hall scales on the Adult Basic Form ranged from .70 to .84. Statistical concepts for validity traditionally utilized in test measurement were not used. Validity judged on seven descriptive categories discussed in manual.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Adult basic form was used with adults who read at the third or fourth grade level, or who were participating in ABE program.

B. Skills Needed: Pencil usage; approximately fourth grade reading level.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Fairly useful in present form.

C. Mental Retardation: Fairly useful in present form depending on severity of mental retardation.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Potential modifications include administrator presenting test items verbally or test items being translated to braille. Response selection may be easier for the client if presented in braille rather than presented orally since client must choose from five possibilities. The examiner should screen out all inappropriate items.

B. Deaf: Except for minimal introductory remarks read aloud by examiner, this instrument is presented in a written format. The deaf client with a fourth grade reading level should have no problems. The test may be signed to those with limited reading levels although this method would be quite time consuming.

C. Mental Retardation: Modifications are not necessary for the mentally retarded client with a fourth grade reading level or above. (If reading level not adequate, another instrument is advised.) Verbal presentation of the test items needs to be approached cautiously by the examiner. The mentally retarded client may be able to comprehend the verbally presented items but be quite confused with the method of selecting a response. Additional practice items plus a review of client's responses may help minimize confusion and ensure accuracy.

VII. SUBJECTIVE COMMENTS: An appealing feature of the Hall is its three forms used with different populations: Adult Basic Form, the Young Adult/College Form, and the Intermediate Form (Grades 3-7). The Hall appears to encourage client involvement, a plus, but requires a lot of time to interpret.

VIII. ORDERING INFORMATION:

A. Available From: Scholastic Testing Service, Inc.

B. Copyright Date: 1964, 1976

C. Manual Update: 1968, 1971, 1976

MANSON EVALUATION (ME)

I. PURPOSE: The purposes of the ME are to identify alcoholics and/or non-alcoholics with personality characteristics often found in alcoholics, and to "obtain understanding of the psychodynamics involved in alcoholic or potential alcoholic personalities in order to assist in rehabilitation." The test has one overall and seven trait scales: anxiety, depressive fluctuations, emotional sensitivity, resentfulness, incompleteness, aloneness and interpersonal relations.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: A combination test booklet/score profile consists of 72 statements from which the client gives either a "yes" or "no" response. There is a "psychograph" and chart on the back of the two page test booklet.

B. Administration: The self-administered, untimed test can be completed by either individuals or groups in ten to 20 minutes.

C. Scoring: Hand scored with a key in approximately five minutes. Trait scores and total scores are counted and transferred to the back of the questionnaire and then plotted on a trait chart.

D. Norms: There are four norm groups: alcoholic men and women and non-alcoholic men and women. The non-alcoholic groups were defined as individuals seeking neither treatment nor employment. All samples are very small and no sample characteristics are given.

E. Reliability and Validity: A high reliability coefficient of .94 was listed for both male and female groups. While the "manual" gives some validity data, there is not enough information to judge these results.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Manual suggested employers may find useful in identifying alcoholics or potential alcoholic personalities prior to employment or training.

B. Skills Needed: Pencil usage and an estimated sixth grade reading level are needed. The two-page "manual" contains no estimated reading level.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Useful if the client has a sixth grade reading ability.

C. Mental Retardation: The test may be useful in present form with higher functioning mentally retarded persons.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Because the test requires only "yes" and "no" answers, each item could be reproduced in large print on a separate card and the client sort the items into two piles. Audio cassette administration is possible, but because of the sensitive nature of the items, privacy must be ensured.

B. Deaf: Some of the vocabulary could be reduced. Example items should be provided for all disabled groups.

C. Mental Retardation: Higher functioning mentally retarded person should have little trouble with the ME. The items most likely are not valid for lower-functioning mentally retarded persons.

VII. SUBJECTIVE COMMENTS: The discussion on validity was vague and confusing. The two-page manual gave very few details on interpretation. Views on alcoholism have changed considerably since 1965 and examiner is cautioned against possible unintentional misuse. Many experts in the alcoholism field do not accept the concept of an "alcoholic personality," let alone a poorly constructed test to determine its presence. We suggest that Manson Evaluation not be used at all; if it is used, that the results be incorporated into counseling and not used to make any decisions.

VIII. ORDERING INFORMATION:

A. Available From: Western Psychological Services

B. Copyright Date: 1948, 1965

C. Manual Update: 1965

MINNESOTA IMPORTANCE QUESTIONNAIRE (MIQ)

I. PURPOSE: "To measure 20 psychological needs and six underlying values that have been found to be relevant to work adjustment, specifically to satisfaction with work." The needs assessed are: ability utilization, achievement, activity, advancement, authority, company policies, compensation, co-workers, creativity, independence, moral values, recognition, responsibility, security, social service, social status, variety and working conditions.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: There are two separate forms: (1) a paired form of seven pages and (2) a ranked form of 17 pages. Both require a separate answer sheet. The client chooses one of two statements on the paired form and on the ranked form ranks five statements in order of preference.

B. Administration: This untimed instrument may be individually or group administered. Paired form generally requires 35 minutes and the ranked form 20 minutes. All instructions for administration were in test booklet.

C. Scoring: May be hand or computer scored. Hand scoring was discouraged in the manual because it is time consuming.

D. Norms: Norms were developed on a total of 5,358 individuals. The only comparison data needed for appropriate use of the MIQ consists of profiles of Occupational Reinforcer Patterns for each normed occupation. These comparison data were collected from ratings of supervisors and of incumbents within each occupation. Sample characteristics were fairly well defined. Detailed information is available in the technical manual.

E. Reliability and Validity: Median internal consistency reliability coefficients for the 20 MIQ scales in several subject groups were generally in the .80's. Test-retest coefficients for the 20 scales ranged from a high of .89 for an immediate test-retest interval to a low of .48 for a six month test-retest interval. For MIQ profiles, however, median stability coefficients were in the .80's. Scale intercorrelations ranged from .05 to .77. Validation of the 1967 MIQ consists of content validity studies, group difference studies, and concurrent validity studies. Reasonably good evidence of the validity of the MIQ was obtained using each of these methods. A summary of the results would be too detailed to report.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The MIQ is "Appropriate for use with adults or high school students of both sexes;" it should not be used with individuals younger than age 16.

B. Skills Needed: A fifth grade reading level and use of pencil are required.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Unless given orally or through some other means, the test is not appropriate for blind clients in its present form.

B. Deaf: The MIQ can be used easily with a deaf person who has the needed reading skills.

C. Mental Retardation: A high functioning mentally retarded client may be given the MIQ.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The MIQ can be presented orally by the administrator, by cassette tape, or in braille form. Answers can be recorded by the administrator on the appropriate answer sheet. The test items could be presented orally with the clients responding by typing the first letter of the response. Finally each item could be presented in braille or large print on a card and the client could sort these cards into appropriate piles.

B. Deaf: Directions may be given through either signing or lip reading to the deaf client. The test examiner should review the items and find synonyms for some of the more difficult words.

C. Mental Retardation: The MIQ could be administered orally or by cassette with the client responding on an answer sheet or to the administrator.

VII. SUBJECTIVE COMMENTS:

The MIQ is a very appropriate tool for vocational evaluation. It is recommended that MIQ results be considered in conjunction with information concerning the abilities and interests of a client. The MIQ can be very useful in helping a person clarify his/her value system as it relates to work.

VIII. ORDERING INFORMATION:

A. Available From: Vocational Psychological Research, University of Minnesota

B. Copyright Date: 1981

C. Manual Update: 1975, 1981

MYERS-BRIGGS TYPE INDICATOR (MBTI)

I. PURPOSE: "To implement Jung's theory of type." Attempts to determine people's basic preferences in regard to perception and judgment.

II. SUBTESTS: No "true" subtests but test divided into three parts: Part I - "Tell how you usually feel or act;" Part II - "Which word appeals to you?"; Part III - "Tell how you usually fee or act" (like Part I).

III. TEST CHARACTERISTICS:

A. Format: Separate answer sheet and test booklet containing 126 items. Client darkens circle to indicate response.

B. Administration: "Virtually self-administering" to groups or individuals with no time limit, although average time requires less than 50 minutes. All instructions are given on front page of client's test booklet.

C. Scoring: Computer or hand scored with stencils. Directions on scoring with stencils must be read carefully. Scores converted to report form with general interpretive statement provided. Scores indicate client's psychological preferences or "type."

D. Norms: The various "type" combinations were compared with aptitudes for high school students and college students with various majors. Differences between people with opposite preferences on several additional groups, workers, and nonworkers were explored.

E. Reliability and Validity: Split-half reliability coefficients for indices ranged from .60 to .94 and seemed to be better for those individuals with a higher level of education. Several studies referring to the scales of the Myers Briggs were reported in manual. Although no mention of validity was found in the manual, it appeared that these studies represented construct validity.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Junior high, senior high, and college students, psychiatric populations, and employees.

B. Skills Needed: Identified reading level not found, however, manual stated clients in junior high school with "mediocre" verbal ability may have trouble; pencil usage. (Supplemental information (1983) claimed that a sixth grade level was needed).

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Fairly useful in present form.

C. Mental Retardation: Not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The questions in the separate test booklet and the response choices on the answer sheet could be read aloud by the test administrator. The client's verbally expressed responses could then be recorded by the administrator. Translating the test items and response choices to braille is another potential modification.

B. Deaf: Modifications would be unnecessary for the deaf individual whose reading skills were adequate. The manual stated reading level would need to be more than "mediocre" compared to junior high school level students.

C. Mental Retardation: The vocabulary used is fairly advanced. Modifications are not readily feasible.

VII. SUBJECTIVE COMMENTS: The test seems to be a vocationally relevant tool. Interpretation information may be expansive or detailed depending on what is needed by test administrator.

VIII. ORDERING INFORMATION:

A. Available From: Consulting Psychologists Press, Inc.

B. Copyright Date: 1962, 1977, 1983

C. Manual Update: 1977

SALES ATTITUDES CHECKLIST (SACL)

I. PURPOSE: To identify potentially successful salesmen; to measure sales attitudes and habits.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: For each of the 31 items on the combination test booklet/answer sheet, the client must choose the one of four descriptive statements that is most descriptive of self and the one least descriptive of self (forced choice format) by marking with an "X". If client changes his/her mind, client must circle the "X" instead of erasing.

B. Administration: Administered individually or to a group. Is untimed and usually takes 15 minutes or less.

C. Scoring: Self scoring in approximately 10 minutes. Responses are automatically recorded through carbon. Total score computed and converted to percentiles.

D. Norms: Data collected on five sales and sales applicant populations. ranging from 57 to 197 size. Samples are not adequately described. Normative data contained in the manual is considered totally inadequate.

E. Reliability and Validity: Reliability studies not attempted due to the "nature" of test. Manual stated the reliability was sufficiently high to use in predicting sales success. Concurrent validity studies were briefly mentioned. Local validity studies encouraged. In short, the manual contains little technical data on the test.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Individuals interested in sales positions.

B. Skills Needed: Not identified in manual; reading level estimated to be between sixth and eighth grade; pencil usage.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not usable in present form.

B. Deaf: This could be useful if the client could read and understand the items.

C. Mental Retardation: Because of the high reading level, it is not useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The items would have to be placed in large print or other format. In this forced choice test, the examinee must read and select two responses of the four choices. Because of this format, the visually disabled person would have to be able to perceive all four choices for each item at the same time.

B. Deaf: Modifications would include added instructions, and possibly lowering the vocabulary level.

C. Mental Retardation: Any modifications would have to include lowering the vocabulary of the test.

VII. SUBJECTIVE COMMENTS: The statistical information in the manual is totally inadequate. Because of this, extreme high or low scores may be more meaningful than in-between scores. Manual suggests local norms be gathered. This test should never be used alone to select persons for sales jobs. If the Sales Attitudes Check List has any value, it would be as a counseling and awareness tool. This could be done by discussing specific items after testing with the client who is interested in a sales career.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1960

C. Manual Update: Not applicable

SELF DESCRIPTIVE INVENTORY (SDI)

I. PURPOSE: To "measure normal personality dimensions and vocationally oriented temperament dimensions." A generalized self-description of vocational interests, temperaments, and values.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: 200 adjectives in the two-page inventory are marked by client in relation to self as Yes, No, Sometimes.

B. Administration: Untimed and basically self-administered to groups or individuals in approximately 20 minutes.

C. Scoring: Computer scored in approximately two weeks in profile form.

D. Norms: Age norms by sex: teenage, young adult, and middle age. Year of norms not found in manual.

E. Reliability and Validity: The individual scale reliabilities for test-retest individuals were in the .80's and .90's. Standard deviations reported. Detailed information on content, construct, and concurrent validity presented in manual.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: High school students and adults.

B. Skills Needed: Eighth grade reading level or above; pencil usage.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Fairly useful in present form.

C. Mental Retardation: Not readily useful.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Although this instrument consists of 200 items, each item is only one word and the self-descriptive choices are either yes, no, or sometimes. The uncomplicated format could easily be presented verbally by the administrator to the blind client.

B. Deaf: The deaf client with adequate reading skills should have no problems comprehending the written instructions. This test would obviously not be appropriate for the client who did not comprehend the meaning of the self-descriptive words.

C. Mental Retardation: It is likely that this instrument would be too advanced for the mentally retarded client in word usage and reading comprehension. Modifications do not appear feasible for the mentally retarded client whose reading level is not adequate.

VII. SUBJECTIVE COMMENTS: Manual claimed that the SDI examines vocational preferences (based on Holland's themes) and personality and values. As such, the instrument seems generally related to the TVI, the SCII, and the CAI. The manual stressed that the SDI should be used in conjunction with (and not in place of) other instruments in order to examine possible similarities or variances in results.

VIII. ORDERING INFORMATION:

A. Available From: National Computer Systems

B. Copyright Date: 1977

C. Manual Update: Not applicable

SELF-DIRECTED SEARCH (SDS)

I. PURPOSE: The purpose of the SDS is to help the client to explore occupation(s). The manual points out that this instrument is most beneficial when used with persons needing a minimal amount of vocational assistance. The SDS has six scales, based on Holland's themes: realistic, investigative, artistic, social, enterprising, and conventional.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The SDS is organized according to Holland's occupational themes. This 14-page booklet guides the client through a series of assignments which helps narrow down occupational preferences. Items ask about likes, competencies and job; each is answered with a "yes" or "no".

B. Administration: This self-administered test can be completed in about 40-50 minutes by individuals or groups.

C. Scoring: The SDS is self-scored; scoring time is included in the total administration time of 40-50 minutes. The manual suggested that scoring be supervised in order to minimize errors.

D. Norms: Normative studies, done throughout the 1970's, were based on high school and college students. Some comparisons made to employed adults were based on 1970 census data. Very detailed and somewhat wordy norm information was available in the manual.

E. Reliability and Validity: Reliability was presented as the agreement between machine and student scored results. The Kappa reliability coefficient was .81 and .82 for males and females respectively. The Counselor's Guide contains no information on validity.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: SDS has been "used successfully with all types of populations (specifics not identified). Form 'E' can be used with clients having a lower reading level (grade four or above). The manual warns against using the Self Directed Search with "grossly disturbed, uneducated, or illiterate."

B. Skills Needed: A grade four reading level or higher and pencil usage are required.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Form E should be useful with modification.

C. Mental Retardation: Administer Form E to persons reading at the fourth grade level.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The test items could be placed on cards and then separated into two piles. Oral or cassette administration are also possible.

B. Deaf: If Form E is used, modifications will be unnecessary for persons having even elementary reading skills.

C. Mental Retardation: While a mentally retarded person with basic skills could take Form E, the evaluator should assist in the scoring. He/She should also assist in the interpretation.

VII. SUBJECTIVE COMMENTS: While the test is time consuming, it often helps client to begin thinking about careers. Client needs to be fairly cognitive to independently go through the process of assignments.

VIII. ORDERING INFORMATION:

A. Available From: Consulting Psychologists Press, Inc.

B. Copyright Date: 1979

C. Manual Update: 1973, 1975, 1977, 1979

TEMPERAMENT AND VALUES INVENTORY (TVI)

I. PURPOSE: The TVI was "designed to measure basic personality characteristics that would compliment information obtained from vocational interest inventories and ability testing for career counseling."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The inventory describes various ideas and activities. The examinee rates the importance of each statement by choosing from five degrees of preference, i.e., very important, important. The final section of the test consists of true/false self-descriptive statements. Answers are recorded by darkening circles in the test booklet.

B. Administration: The TVI can be given to groups or individually in about 30 minutes.

C. Scoring: The TVI is computer scored. Results take about two weeks and include an individualized, interpretive narrative report.

D. Norms: Norm samples were based on three groups divided by age and sex, i.e., teenage, young adult, and middle age. The year of the samples was not given in manual. More detailed information including means and standard deviations was available in manual.

E. Reliability and Validity: Reliability was reported on personality and vocational scales. Reliability was also reported individually in the form of test-retest correlation, with standard deviations in the .88 range, which indicates a strong reliability. The manual provided detailed information on content, construct, and concurrent validity for both scales. Validity was listed as being good on all scales. Refer to the manual for more detailed information.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: High school students and adults. No mention of "special" populations in manual.

B. Skills Needed: Eighth grade reading level or better. Pencil usage is required to indicate answers.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Fairly useful in present form.

C. Mental Retardation: Not readily useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The short words or phrases on this instrument could be presented verbally by the administrator who would also record client's responses. The test could also be translated to braille.

B. Deaf: The TVI would be appropriate for the deaf client with adequate reading skills. Signing would be fairly time consuming since most words on the TVI would require finger spelling.

C. Mental Retardation: Modifications are probably not feasible due to the eighth grade reading level or above, which is required to take the test.

VII. SUBJECTIVE COMMENTS: The TVI provides temperament information that can be compared to the more subjective temperament information on specific jobs as listed in the Classification of Jobs. The information received in report is often of a more "personal" nature to the client and as a result often more meaningful.

VIII. ORDERING INFORMATION:

A. Available From: National Computer Systems

B. Copyright Date: 1977

C. Manual Update: None

DEXTERITY

CRAWFORD SMALL PARTS DEXTERITY TEST (CSPDT OR CRAWFORD)

I. PURPOSE: The Crawford was designed to "measure fine eye-hand-coordination."

II. SUBTESTS: Although not true subtests, the CSPDT consists of Part I - Pins and Collars and Part II - Screws.

III. TEST CHARACTERISTICS:

A. Format: The Crawford consists of a wooden board, approximately 10" X 10" X 1" with individual wells for the pins, collars and screws. Part I - Pins and Collars requires the examinee to "use tweezers to insert small pins in close-fitting holes in a plate and to place small collars over the protruding pins." In Part II - Screws the examinee manually places "small screws in threaded holes in a plate and screws them down with a screwdriver."

B. Administration: This typically individually administered test takes approximately 15 minutes. The examinee sits at a table to take the test.

C. Scoring: The score for each part is the time required to complete the entire task, i.e. a work-limit test. Provisions for administering the Crawford as a time-limit test are also given.

D. Norms: The 1956 norm groups presented in the manual include male and female applicants, female employees, male veterans, and male students. The newer norms (year not given) include data for adults in vocational training programs, and mentally retarded adults and students. Sample characteristics were adequately described but size appears somewhat small.

E. Reliability and Validity: Reliability for the work-limit norms was estimated by correlating the time to complete the first half of the test with the time to complete the second half. Reliability using time-limit scores was also computed. Both used the Spearman-Brown formula with correlations in the .80's and .90's. Validity was based on performance criteria and supervisor's ratings. The sample, however, was small. Correlations between scores on Part I and Part II and correlations between the Crawford and other tests were presented.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: This test is used primarily for "practical personnel selections and guidance work." The manual also indicates using the CSPDT with handicapped persons in special vocational evaluation and training programs.

B. Skills Needed: The use of both arms and hands, the ability to grasp and the ability to understand verbal instructions are necessary.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Modification of the instructions would be needed.

C. Mental Retardation: Very useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The blind person would require time to become familiar with the board and would need ample time to practice. A dexterity test normed specifically on a blind population may be more useful.

B. Deaf: The verbal instructions would need to be written or signed. The evaluator may be able to explain the instructions adequately with gestures and demonstrations.

C. Mental Retardation: No modifications needed.

VII. SUBJECTIVE COMMENTS: The Crawford is a widely used test to determine a person's dexterity skills using small tools. The new norm groups would have been better if they had included data on employed workers. The validity appears somewhat weak. Mentally retarded persons have been observed to get quickly frustrated with both parts.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1981

C. Manual Update: 1981

HAND-TOOL DEXTERITY TEST (BENNETT)

(1965 Revision)

I. PURPOSE: The test "has been constructed to provide a measure of proficiency in using ordinary mechanic's tools. The ability measured by this test is a combination of aptitude and of achievement based on past experience in handling." The score is the amount of time required to complete the task, and it is given in percentage form for one or more of eight different norm groups.

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: An upright frame is placed in front of the examinee, and he/she must remove the nuts, bolts and washers from the left side and mount them on the right side. There are three different sizes of nuts and bolts; separate tools are required for each.

B. Administration: Timing on this individually administered apparatus test is the amount of time to completion; most clients complete it in between five and 20 minutes. The apparatus frame should be bolted to a sturdy table 34 inches high. The examinee stands during the test.

C. Scoring: One time score in minutes and seconds to completion is obtained, and this is compared with norm tables. Comparison with norm tables takes less than one minute.

D. Norms: Percentile norms based on the time to completion are given in the manual for the following groups: male job applicants in a southern plant, male adults at a vocational guidance center, airline engine mechanics, apprentice welders in a steel company, electrical maintenance workers, employees and applicants in a manufacturing company, boys at a vocational high school, and high school dropouts in a metropolitan center. The composition of the eight norm groups are not adequately described in the manual. The mean age, job experience, minority group status, and other important descriptive information are not presented. In addition, the norms for four of the eight groups were based on sample sizes of less than 200 subjects; these should be used with extreme caution.

E. Reliability and Validity: The manual reports two test-retest studies that produced reliability coefficients of .91 and .81, considered high for a performance test. Two types of validity data are presented: (1) correlations with foremen's ratings and (2) correlations with other tests. The foremen's ratings were between .14 and .51; other tests between .11 and .42.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: No specific groups are mentioned in the manual. The test appears to be used for employee selection and guidance.

B. Skills Needed: The test required the ability to hear and understand verbal instructions as well as full use of hands and arms.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not useful in present form.

B. Deaf: Not useful in present form.

C. Mental Retardation: Very useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: The blind person's hands could be guided by the examiner, who permits the client to carefully and systematically explore all parts of the frame, the nuts, bolts, and washers as well as the tools and their use. Although the manual does not permit a practice exercise, the evaluator should have the client practice prior to a timed administration. However, this practice exercise should be taken into account when the results are interpreted.

B. Deaf: Directions would have to be given by signing or lip reading, and the examinee would have to indicate when he/she was finished. A complete demonstration by the examiner may also be necessary. Because the purpose of the test is to have the client perceive differences between the sizes of bolts, color coding would not be appropriate.

C. Mental Retardation: Some extra demonstration may be needed by the client. The manual states that the "examiner should feel free to supplement the following directions in any reasonable way to improve the examinee's understanding of the task."

VII. SUBJECTIVE COMMENTS: The flexibility of instructions and the practical nature of the Bennett make this test appealing to vocational evaluators. However, there are several technical problems: (1) the norm groups are small and not clearly described, (2) the norms are totally out of date, and (3) there is a minimum of validation data in the manual. Because of these technical problems, we suggest this test be used with caution.

VIII. ORDERING INFORMATION:

A. Available From: The Psychological Corporation

B. Copyright Date: 1965

C. Manual Updates: None known.

MINNESOTA RATE OF MANIPULATION TEST (MRMT)

(1969 Edition)

I. PURPOSE: The test was "designed to provide employers with an instrument that would improve the efficiency of personnel selection for jobs requiring arm-and-hand dexterity."

II. SUBTESTS: Placing Test, Turning Test, Displacing Test, One-Hand Turning and Placing Test, Two-Hand Turning and Placing Test.

III. TEST CHARACTERISTICS:

A. Format: "Generally each test requires the subject to place blocks into the holes of a board in some specified manner." The board is approximately 32 inches long. The 60 round blocks are yellow on one side and orange on the other.

B. Administration: This individual or group administered dexterity test required about two minutes per trial for each of the subtests. For each subtest, one trial must be given for practice and then between two and four additional test trials are given. The manual states that the Placing Test and Turning Test are most frequently administered. The client stands during the test at a table between 28 and 32 inches high.

C. Scoring: The time in seconds required to take each test is totaled. The total is compared with the appropriate number of trials and then converted to percentiles, standard scores, stanines, or verbal ratings. Scoring for each subtest takes less than five minutes.

D. Norms: The normative sample consisted mainly of "adult, older, unemployed people of the depression era prior to 1946." The 1957 norms were collected on "young people who were employed or seeking employment." Apparently, over one-half of the younger group were Minneapolis Library patrons.

E. Reliability and Validity: Reliability was estimated in 1943 by "correlating time on first and second trials and correcting with the Spearman-Brown formula." Two-trial reliability ranged from .87 to .95 across the four subtests. Validity was based on the performance of 60 men on the test correlated with supervisors' ratings of job performance. The coefficients ranged from .32 to .57.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual suggests this test be used to assist in employer selection with those jobs requiring some type of dexterity. Instructions to give this test to the blind are included.

B. Skills Needed: The client needs to be able to stand and extend his/her arms and hands; instructions are verbal.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Useful in present form if the detailed instructions given in the manual are given.

B. Deaf: Not useful in present form due to the verbal instructions.

C. Mental Retardation: Useful in present form.

VI. POSSIBLE MODIFICATIONS:

A. Blind: Modifications are unnecessary if the instructions to the blind found in the manual are followed.

B. Deaf: Instructions would have to be written or gestured. Additional practice items may be helpful. The deaf examinee would need to realize the importance of performing as quickly as possible.

C. Mental Retardation: Modifications are not really necessary although additional practice trials may facilitate client understanding.

VII. SUBJECTIVE COMMENTS: The major concerns with this test are its age and insufficient norm groups. The evaluator may benefit from establishing local norm groups.

VIII. ORDERING INFORMATION:

A. Available From: American Guidance Service, Inc.

B. Copyright Date: 1946, 1957, 1969

C. Manual Update: 1969

PENNSYLVANIA BI-MANUAL WORK SAMPLE

I. PURPOSE: This test was designed to show an individual's capacity to integrate a number of unique motor traits into a well organized and smooth working pattern of performance. The assembly task "combines finger dexterity of both hands, gross movements of both arms, eye-hand coordination."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The task involves putting a nut on a bolt and placing it in a board in front of the evaluee. One hundred and five nuts and bolts are in separate trays on either side of the board; these are assembled and placed in holes on the board. Disassembly of the parts is the second part of the test.

B. Administration: This group administered apparatus test is administered to clients while seated on a 19 inch stool in front of a table 30 inches high. The first 20 bolts are assembled during a practice period. The set-up differs for left and right handed persons. One examiner is needed for every five examinees. The test can be given in 10 to 15 minutes.

C. Scoring: The number of minutes and seconds to assemble and disassemble the nuts and bolts are recorded. These are added together to produce a single final "transmuted" score.

D. Norms: Norms are available on the following groups: separate male and female norms on two age groups (15-17, 16-39), and an "industrial group." The test has also been normed on blind and partially blind persons. A special supplement, Motor Skills Tests Adapted to the Blind, contains directions for use of this test with blind persons, and is available from the publisher.

E. Reliability and Validity: Split-half reliability with 112 persons are given as .89; we consider these high for a performance test. The manual contains moderate correlations with other dexterity tests. No other reliability or validity are contained in the manual.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: Other than the norm groups, no populations are specified in the manual.

B. Skills Needed: Ability to understand oral instructions and use of both upper extremities are necessary.

V. USEFULNESS IN PRESENT FORM:

A. *Blind*: This test is especially normed on blind persons and specific instructions for use with the blind are available.

B. *Deaf*: Deaf persons should have few problems with this test.

C. *Mental Retardation*: The test should be useful with mentally retarded persons.

VI. POSSIBLE MODIFICATIONS:

A. *Blind*: No modifications are necessary unless specified in the special instruction manual.

B. *Deaf*: Directions will have to be given through signing and/or lip reading. The administrator must carefully observe during the practice period and make corrections as needed.

C. *Mental Retardation*: Demonstration and practice assemblies and disassemblies may have to be gone over so that the examinee is familiar with the process and feels competent to begin. Individual administration is also a good idea.

VII. SUBJECTIVE COMMENTS: The strong point of this test in vocational evaluation is its norms for blind persons. Beyond this, the Pennsylvania is very dated and should have completely new norms as well as new reliability and validity data.

VIII. ORDERING INFORMATION:

A. *Available From*: American Guidance Service

B. *Copyright Date*: 1943 and 1945

C. *Manual Update*: Unknown, assume none.

PURDUE PEGBOARD

I. PURPOSE: This dexterity test is designed to aid in the selection of employees for industrial jobs requiring manual dexterity. It measures two types of dexterity: one involving gross movements of hands, fingers, and arms; the other involving primarily what might be called "fingertip" dexterity.

II. SUBTESTS: There are four sub-tests: (1) right hand only, (2) left hand only, (3) both hands simultaneously, and (4) assembly.

III. TEST CHARACTERISTICS:

A. Format: The Pegboard includes pins, collars, and washers that are located in four cups at the top of the board. Each subtest involves a separate task. The right hand test requires the placing of pins into holes on the board for a 30 second period. Left hand involves the same process with the opposite hand. Both hands requires placing pins as fast as possible into holes with both hands. These first subtests use only the pins and have a 30 second limit. The assemble task consists of assembling pins, collars, and washers on the board for a speeded time of one minute.

B. Administration: This apparatus test can be administered to seated groups of up to ten persons in about ten minutes. No special conditions or equipment are necessary.

C. Scoring: Five separate percentile scores are obtained from the four subtests: (1) right hand, (2) left hand, (3) both hands, (4) right plus left plus both hands and (5) assembly. The scores are the number of pins placed or assemblies completed within the time periods. Scoring is performed after each section is administered.

D. Norms: Percentile norms are given for eight groups of male and female industrial workers and two general groups composed of applicants and college students. The manual describes most of the characteristics of these groups except their job experience, minority group composition, and date of testing.

E. Reliability and Validity: The test-retest reliability correlations are between .66 and .79. These are low for a standardized test and, therefore, the test should be used with caution, especially when recommending employment based on its results.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The test was designed to aid in the selection of "employees for industrial jobs such as assembly, packing, operation of certain machines..."

B. Skills Needed: The ability to hear and follow oral directions and use of fingers, hands, wrists and arms are needed.

V. USEFULNESS IN PRESENT FORM:

A. Blind: Not usable in present form.

B. Deaf: The deaf client can be given the Pegboard with no problem except for changing how the directions and timing are given.

C. Mental Retardation: The Purdue Pegboard can be given to the retarded client.

VI. POSSIBLE MODIFICATIONS:

A. Blind: In theory a visually disabled person could take the test if allowed to use both hands to determine where to place the pins. A practice period during which the examiner assists by guiding the client's hands would be useful.

B. Deaf: Directions for the test would have to be given either by signing and/or lip reading. The time would have to be called by some method such as switching the lights on and off. The two sides of the board should be color coded to distinguish left from right.

C. Mental Retardation: Individual administration and sufficient practice during the first trials should be assured for the retarded client.

VII. SUBJECTIVE COMMENTS: Because of low reliability and low validity coefficients presented in the manual, it appears that the test stands mostly on "face" validity. It is suggested that the test not be used alone to select people for assembly jobs. If used at all, the Purdue Pegboard should be combined with other test and work sample results.

VIII. ORDERING INFORMATION:

A. Available From: Science Research Associates, Inc.

B. Copyright Date: 1948, 1961, 1968

C. Manual Update: Unknown, assume 1968

STROMBERG DEXTERITY TEST (STROMBERG or SDT)

I. PURPOSE: The Stromberg "was developed as an aid in choosing workers for jobs which require speed and accuracy of arm and hand movement."

II. SUBTESTS: Not applicable.

III. TEST CHARACTERISTICS:

A. Format: The Stromberg contains 54 round red, blue and yellow disks with both sides painted and a durable board containing 54 holes in one side of the hinges. The other side consists of a flat surface. (The board folds in half for storage.) The SDT uses four trials. On the first the examinee transfers the discs according to a set pattern from the form board to the open board. On the second trial the examinee transfers the disks according to a set pattern from the form board to the open board. Trials three and four are identical to trials one and two. All movement is with one hand.

B. Administration: This individually administered apparatus test can be given and scored in about ten minutes. The examinee stands at a 30 inch table to take the test.

C. Scoring: The examinee receives four trials; trials one and two are practice and not scored. The number of seconds needed to complete trials three and four are added to obtain a single final score. This score is compared to the various norm tables.

D. Norms: Seven norm groups are available, ranging from trade school students through male and female applicants to male and female workers. No descriptive data are given about the characteristics of the norm groups; not even their sizes are presented.

E. Reliability and Validity: The manual lists two studies using the Spearman-Brown formula with correlations of .84 and .87. Because this formula overestimates the reliability, the "true" reliability on the Stromberg is somewhat lower than the reported coefficients. The manual contains no validity information worthy of note.

IV. SELECTION CRITERIA:

A. Populations Specified in Manual: The manual contains a list of semi- and unskilled occupations held by the people that were administered the test. The Stromberg was intended for employee selection.

B. Skills Needed: The ability to stand, use of at least one upper extremity, and ability to understand oral directions are needed.

V. USEFULNESS IN PRESENT FORM:

- A. Blind: Not useful in present form.
- B. Deaf: The deaf person may be able to take the test without modification if he/she can follow the demonstration accompanying the oral directions.
- C. Mental Retardation: May be useful in present form.

VI. POSSIBLE MODIFICATIONS:

- A. Blind: Because the test requires the use of both color vision and eye-hand coordination, it is not practical to modify it for visually disabled persons.
- B. Deaf: We considered the instructions for the Stromberg to be confusing in moving from one row to another. When testing this group, oral directions must be accompanied by clear demonstration and careful monitoring during the practice trials.
- C. Mental Retardation: Careful explanation of the instructions and careful monitoring and correction (if needed) during the practice trials should be helpful.

VII. SUBJECTIVE COMMENTS: The Stromberg is of limited use because of its inadequate norms and low reliability. The 1951 Preliminary Manual is still being sold, not having been updated since that time.

VIII. ORDERING INFORMATION:

- A. Available From: The Psychological Corporation
- B. Copyright Date: None given in manual; assume about 1951.
- C. Manual Update: Unknown, assume none.

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Test Publishers and Sources of Information

Test Publishers

AMERICAN GUIDANCE SERVICE
Publisher's Building
Circle Pines, Minnesota 55014

1-800-328-2560

AMERICAN ASSOCIATION ON MENTAL DEFICIENCY
5101 Wisconsin Ave, N.W.
Washington, D.C. 20016

(202) 857-5400

CTB/MCGRAW-HILL
Del Monte Research Park
Monterey, California 93940

1-800-358-9547

CONSULTING PSYCHOLOGICAL PRESS, INC.
577 College Ave.
Palo Alto, California 94306

(415) 857-1444

EDITS CAREER GUIDANCE CATALOG
P.O. Box 7234
San Diego, California 92107

(619) 222-1666

INSTITUTE FOR PERSONALITY AND ABILITY TESTING
P.O. Box 188
Champaign, Illinois 61820

(217) 352-4739

JASTAK ASSOCIATES, INC.
1526 Gilpin Ave.
Wilmington, Delaware 19806

1-800-221-9718

NATIONAL COMPUTER SYSTEMS
P.O. Box 1416
Minneapolis, Minnesota 55440

1-800-328-6759

THE PSYCHOLOGICAL CORPORATION
7500 Old Oak Blvd.
Cleveland, Ohio 44130

(216) 234-5300

SCHOLASTIC TESTING SERVICE, INC.
480 Meyer Rd.
Bensenville, Illinois 60106

(312) 766-7150

SCIENCE RESEARCH ASSOCIATES, INC.
155 N. Wacker Dr.
Chicago, Illinois 60606

1-800-621-0476

VOCATIONAL PSYCHOLOGY RESEARCH
N620 Elliott Hall
University of Minnesota
75 East River Rd.
Minneapolis, Minnesota 55455

(612) 376-7377

WESTERN PSYCHOLOGICAL SERVICES
12031 Wilshire Blvd.
Los Angeles, California 90025

(213) 478-2061

Sources of Information:

Tests, Tests (Suppplement), Test Critiques, and Psychware are available from:

Test Corporation of America
330 West 47th Street, Suite 205
Kansas City, Missouri 64112

A Counselor's Guide to Vocational Guidance Instruments is available from:

Publication Sales
American Personnel and Guidance Association
Two Skyline Place, Suite 400
5203 Leesburg Pike
Falls Church, Virginia 22041

The Eighth Mental Measurements Yearbook

The Gryphon Press
220 Montgomery Street
Highland Park, New Jersey 08904